

In This Issue—*The A. E. A. Convention*

MOTOR AGE

Vol. XLV.
Number 15

PUBLISHED WEEKLY AT THE MALLERS BUILDING
CHICAGO, APRIL 10, 1924

Thirty-five Cents a Copy
Three Dollars a Year

The New ESSEX

**2500 New Essex Buyers
Every Week**

Wouldn't You Like To Sell It?

"Hudson has produced a super Essex—offered at a price that will prove a shock to the dealer handling some other line. The closed model, which will easily be the leader, for the first time puts the reputation of a builder of fast and stylish cars behind a product selling for less than a thousand dollars. It looks like the proverbial knockout." —*From AUTOMOBILE TOPICS*

"The New Essex is a revelation of performance, ease of riding and of smoothness."
—*From Motor Age.*

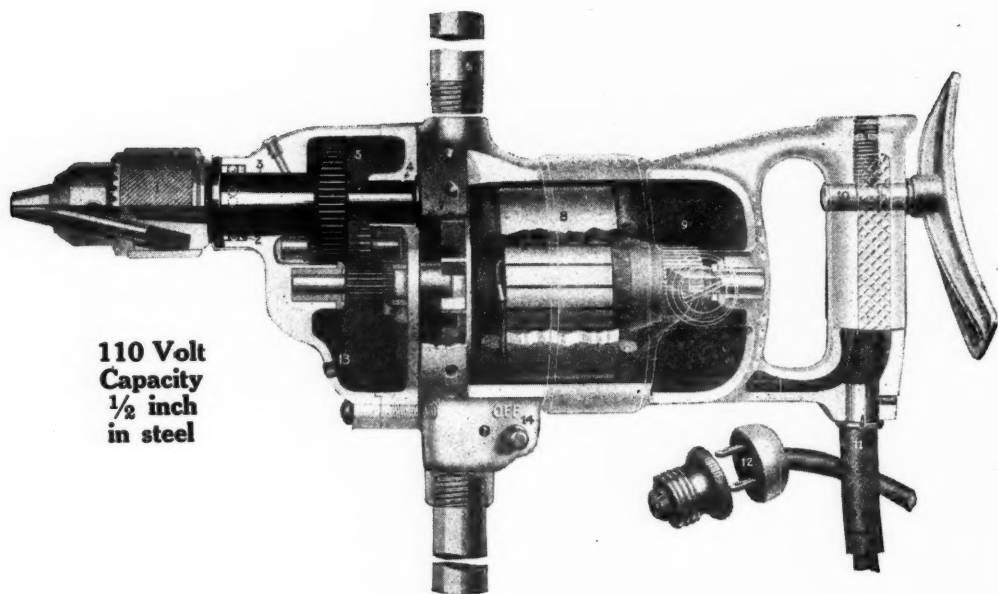
"Steers easily, even on loose gravel at 50 miles per hour." —*From Motor World.*

"A wonderful value—a car of which Hudson Engineers have a right to be proud."
—*From Motor Life.*

"Possesses qualities I didn't believe could be incorporated in a closed car at \$975."
—*H. A. Tarantous, in Motor (U. S. A.)*

The Coach \$975 — Touring Model \$850

ESSEX MOTORS—DETROIT, MICHIGAN



110 Volt
Capacity
1/2 inch
in steel

Just Peep Inside

The Main Phosphor
Bronze Bearings
(Printed in Red)
Support the Driving
Gear at Both Ends

\$50

This is an essential point to look for in any drill you buy. It keeps the spindle running true at all times. This is only one of the many points of superiority found in the Petersen 1/2" Drill—the BIG BROTHER to our Famous Hole Shooter. Heavy-duty spindle hardened—accurately ground.

No need to pay a cent more than \$50 to get the kind of drill you have been looking for. The "Inside" facts are shown in the illustration above.

Perfect balance — unusual POWER—sturdy construction—dependability.

Full year's written guarantee with each machine.

Send for "handy" catalog and the name of jobber in your territory handling the full Petersen Line. We will arrange for a demonstration in your own shop.

A. H. PETERSEN MFG. CO.

1616-24 Fratney St., Milwaukee, Wis.

PETERSEN

Guaranteed

**HALF INCH
ELECTRIC DRILL**

Consider the Future of the Car You Handle

Probably you have noticed the great change that has come about in the past three years in the sale and resale of motor cars.

People learned buying wisdom during the war as never before. This made competition keener. Above all it made the up-to-date automobile dealer look more carefully than ever to the *stability* of the Company and the *saleability* of the car he represents. He knows if he didn't he wouldn't stay in business long—or profitably.

Moon has enjoyed nearly twenty years of steady growth. And it is significant that the period of its greatest increase has been since 1920—a period not only of the keenest competition, but also of the shrewdest discrimination in buying.

Its financial standing is beyond question.

The present worth of the Company has been built up entirely from net earnings, and it has the distinction of never having increased its capital through sale of stock or securities to the general public.

Moon today is the fastest growing automobile company because of its *stability*, its sound future, and because of the car's *saleability* and *resaleability*.

Furthermore, you will find, few if any, nationally popular motor car companies who offer you as stable, as liberal, as straightforward a dealers' proposition.

Greatly increased production opens up a few very attractive Moon territories. Write or wire for full information, as most of these Moon dealer opportunities are being closed rapidly.

MOON

Built by MOON MOTOR CAR COMPANY, St. Louis, U. S. A.
Stewart McDonald, President

New Series A

Six Cylinders

\$1095

Disc Wheels Extra



Moon Has Adopted Lockheed 4-Wheel Hydraulic Brakes! Optional on All Models at Additional Cost.

THE NAME "BENDIX" IS ON EVERY GENUINE PART



CAUTION: In our Bendix Drive advertisements, appearing regularly each month in *The Saturday Evening Post* and *The Literary Digest*, the public is being cautioned to buy none but genuine parts and to look for the name "Bendix" on each part.

The Label Protects You

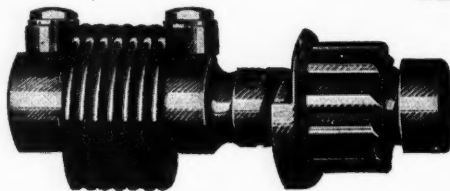
Genuine springs for Bendix Drive have a yellow and red label, which assures you highest quality materials, skilled workmanship and maximum service.

It pays to sell none but
GENUINE PARTS
FOR
BENDIX
DRIVE

ECLIPSE MACHINE CO., ELMIRA, NEW YORK

Detroit Office
1342 Book Bldg.

Eclipse Machine Co., Limited
Walkerville, Ontario



MOTOR AGE

Reg. U. S. Pat. Off.
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CONTENTS

| | |
|--|----|
| Making Service a Profitable Commodity..... | 9 |
| <i>By Sam Shelton</i> | |
| Servicing the Ford Powerplant..... | 16 |
| <i>By B. M. Ikert</i> | |
| Flat Rate Demands Shop Equipment..... | 22 |
| <i>By Paul Dumas</i> | |
| MOTOR AGE'S Picture Pages of Automotive Interest | 26 |
| Editorials— | |
| Square Deal for the Motor..... | 28 |
| Showing the Used Car..... | 28 |
| These We Have Always With Us..... | 28 |
| Factory Stabilization..... | 29 |
| Get Busy on This!..... | 29 |
| Last Call..... | 29 |
| There's Work to Do..... | 29 |
| Taxes Again..... | 29 |
| News of the Industry— | |
| Automotive Tax Shaved in Committee..... | 30 |
| Warn Drop in Tire Prices Possible..... | 31 |
| New Record Made for Motor Imports..... | 32 |
| Large Depot Planned for Stage Lines..... | 33 |
| Foreign Markets Analyzed in Survey..... | 34 |
| Fear Act Will Cause Delay in Exports..... | 35 |
| Used Car Holds Stage at Galesburg..... | 36 |
| Jordan Company in Excellent Health..... | 37 |
| No Fords Stored for Germany..... | 38 |
| Business Notes..... | 40 |
| Concerning Men You Know..... | 41 |
| Coming Motor Events..... | 43 |
| The Readers' Clearing House— | |
| In the Retail Field..... | 42 |
| Buick Flywheel Marks..... | 44 |
| Another Tricky Ammeter..... | 44 |
| Wash Rack and 52-Car Storage Capacity..... | 45 |
| Timing the Valves of a 1910 Indian..... | 46 |
| Two Chevrolet Diagrams..... | 48 |
| Duplex Ignition on 1914 Packard..... | 49 |
| How Large City Garage Owners Benefit from Organization | 50 |
| Squeeks & Rattles..... | 52 |
| Specifications | 53 |

Index to Advertisers Next to Last Page

| SUBSCRIPTION RATES | |
|--|------------------|
| United States, Mexico and U. S. Possessions..... | \$ 3.00 per year |
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| Single Copies..... | 35 cents |

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at Chicago, Ill., under Act of March 6, 1879.

The Good Name of Goodrich

"The Goodrich line as a whole offers the Dealer one of the best selling propositions on the market today.

The policy of the Company regarding Quality is reflected in the wonderful service I have noted in the tires I have sold during my four years handling the line.

Due to the good name enjoyed by Goodrich I do not encounter the obstacles met as a rule in the tire business and this has enabled me to make quick turnovers with the least possible investment."

KENT BROTHERS & CO.,
Wichita Falls, Texas

Build with Goodrich for Permanency

THE B. F. GOODRICH RUBBER CO.
Akron, Ohio

Goodrich

TIRES

"Best in the Long Run"





POOR MATERIALS RENDER POOR SERVICE

Like the cheap umbrella which goes to pieces, so too, the top on an open motor-car will become shabby and break through if made of an inferior grade of topping.

Unknown, cheap materials used for open car tops fail to stand up under the wear and tear of the elements. A good top is essential to a good open car and one must pay the price for quality.

Discriminating top makers and car manufacturers for over 27 years have used the guaranteed nationally known

CHASE
DREDNAUT
Motor
Topping

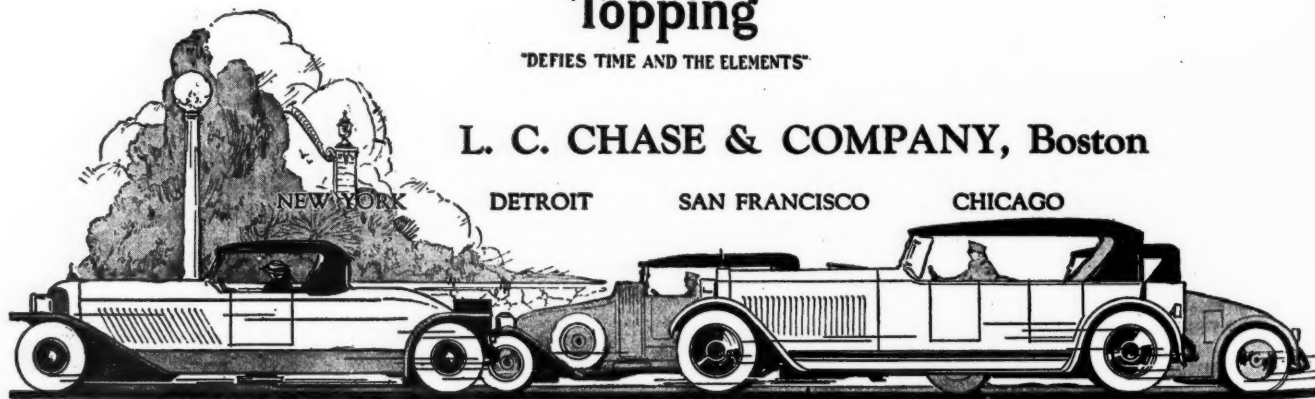
"DEFIES TIME AND THE ELEMENTS"

L. C. CHASE & COMPANY, Boston

DETROIT

SAN FRANCISCO

CHICAGO



"What's in it for me?"

That's what you want to know
about the Studebaker Contract
—now let us tell you

THE sensational success of Studebaker dealers is based on three simple things:

(1) Offering the leader in the quality car field. More people *want* Studebakers, more people think about them when first considering a car, than any other car in its field; hence there is a ready-made demand for Studebakers.

(2) The ability to suit a prospect with a quality car at *his* price. A \$1,000 man is a Studebaker prospect. So is a \$1,500 man—so is the \$2,000 or a \$3,500 man, too—for no finer car than Studebaker is on the market, *regardless of price*. Thus virtually the whole quality field is Studebaker.

(3) A fair contract—a contract backed by a \$90,000,000 company with a 72-year record of honest dealing behind it.

Find out

There may be a Studebaker opening in your city. If you're the type of man that characterizes Studebaker dealers everywhere, we should like to talk to you.

Find out if such an opportunity exists.

LIGHT-SIX

| | |
|------------------------------------|--------|
| 5-Pass. 112" W. B. 40 H. P. | |
| Touring | \$1045 |
| Roadster (3-Pass.) | 1025 |
| Coupe-Roadster (2-Pass.) | 1195 |
| Coupe (5-Pass.) | 1395 |
| Sedan | 1485 |

SPECIAL-SIX

| | |
|------------------------------|--------|
| 5-Pass. 119" W. B. 50 H. P. | |
| Touring | \$1425 |
| Roadster (2-Pass.) | 1400 |
| Coupe (5-Pass.) | 1895 |
| Sedan | 1985 |

(All prices f. o. b. factory)

BIG-SIX

| | |
|-------------------------------|--------|
| 7-Pass. 126" W. B. 60 H. P. | |
| Touring | \$1750 |
| Speedster (5-Pass.) | 1835 |
| Coupe (5-Pass.) | 2495 |
| Sedan | 2685 |

THE STUDEBAKER CORPORATION OF AMERICA
SOUTH BEND, INDIANA

THE WORLD'S LARGEST PRODUCER OF QUALITY AUTOMOBILES

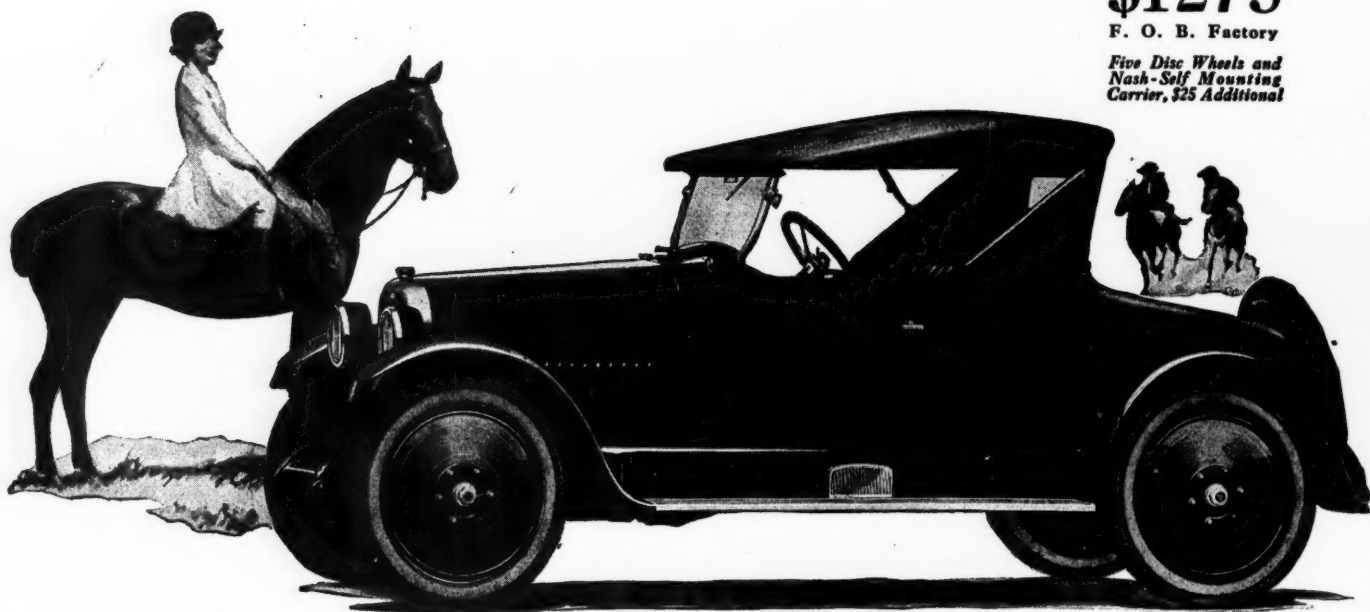
NASH

The Six Roadster

\$1275

F. O. B. Factory

*Five Disc Wheels and
Nash-Self Mounting
Carrier, \$25 Additional*



Nash Dealers Find that a Complete Line Builds Both Volume and Profits

There's no doubt but that having a complete line like the Nash is an invaluable asset.

It helps a dealer definitely and substantially in two important ways.

First, it enables him to build up a bigger volume of sales because it widens his market.

Secondly, it enables him to earn greater profits because he does not lose sales that a dealer with a short line must forego.

An illustration of this is afforded by the Nash Six Roadster pictured above.

Some dealers are without a Roadster. If a prospect has his mind set on a Roadster these dealers can't sell him.

But the Nash dealer makes the sale—and the profit and a satisfied customer.

At the low price of \$1275 f. o. b. factory this Roadster is a real drawing card.

Built low to the road, smartly attractive in appearance, and toned a beautiful Sky Blue, it attracts attentive admiration even when contrasted with costly custom-built conceptions.

Among its many features are grey Spanish leather upholstery; two big luggage compartments, one back of driver's seat and one beneath rear deck; automatic windshield wiper; one-piece windshield; kick-plates; and rear-view mirror.

Part of being a good merchant is in having the merchandise people want.

If you're beginning to suffer from the disadvantages of a short line why not talk to us about the Nash complete line and a good territory?

(2987)

The Nash Motors Company, Kenosha, Wis.

We are Helping Our Dealers Build A Profitable Accessory Business



The following certified accessories specially designed for perfect fit and quick installation on the Oldsmobile Six, can be procured from any Oldsmobile dealer in the U. S. at these net prices, complete with necessary attachments:

| | |
|---------------------------|-------------|
| Front Bumper | • • \$15.00 |
| Rear Standard Bumper | 15.00 |
| Rear Sport Bumper | • 15.00 |
| Radiator Cap, with Bars | 2.50 |
| Road Spot Light | • • 5.00 |
| Windshield Cleaner | • 1.25 |
| Rear View Mirror | • 1.75 |
| Trunk Rails (set of four) | 6.80 |
| Sport Tire Carrier | • • 7.50 |
| Trunk Platform | • • 7.00 |
| Enameled Steel Trunk | 25.00 |
| Windshield Wings (pair) | 17.00 |
| Running Board Step | |
| Plates (pair) | • • • 4.75 |

Genuine Oldsmobile parts can be purchased from any Oldsmobile dealer in any part of the United States, at a standard price established by the factory, without the addition of any war tax, handling, or transportation charges. Every Oldsmobile dealer has a master parts price list issued by us, which is always open for owners' inspection.

Here's another advantage Oldsmobile dealers have—we are providing them with a high-grade line of accessories, specially designed for perfect fit and quick installation on the Oldsmobile Six.

We are advertising that these accessories, complete with necessary attachments, can be bought from any Oldsmobile dealer in the United States at low net prices established by the factory. Our service parts are now handled in the same way.

No need to tell about the profits of the accessory business. You know that the profits are there, and you know too that your competitor, the accessory dealer, is getting most of them. Now Oldsmobile dealers can enjoy this extra business with extra profits. Be an Oldsmobile dealer.

OLDS MOTOR WORKS, LANSING, MICHIGAN
Olds Motor Works of Canada Ltd., Oshawa, Ontario

OLDSMOBILE ~ SIX

PRODUCT OF GENERAL MOTORS

The Good MAXWELL

Use It Or Fight It

Every automobile dealer in America will either use the Maxwell-Chrysler line for his own success, or he will have to fight it.

No group or combination is so strong today in sales possibilities, and money making possibilities, as the Maxwell-Chrysler.

No other line enables the dealer to appeal logically and successfully to so large a percentage of all the motor car buyers of America with such quick capital turnover; such a high ratio of quick assets; or so small a capital risk.

The sales possibilities and merchandising opportunities are plain, of course. To the superficial thinker, this seems merely very desirable.

In reality it is much more.

It means that the Maxwell-Chrysler dealer need carry only two lines to meet the competition of five or six others—each of whom has as much money tied up as the Maxwell-Chrysler dealer, and only half the possible volume.

It means that stocks can be kept more liquid and turned over oftener, because

the Maxwell-Chrysler dealer can get carload freight rates on a mixed car of Maxwells and Chryslers.



The Maxwell Flat Rate Guaranteed Service System helps him to make a profit on repairs—and at the same time to charge the customer less. It is the most advanced service plan in the entire industry. It includes a complete service department accounting system, and is simple and economical in operation.

And above and beyond all these advantages the Maxwell-Chrysler dealer is protected and helped by a great and powerful organization that values the friendship of its dealers and is committed to the policy of insuring that its dealers make money.

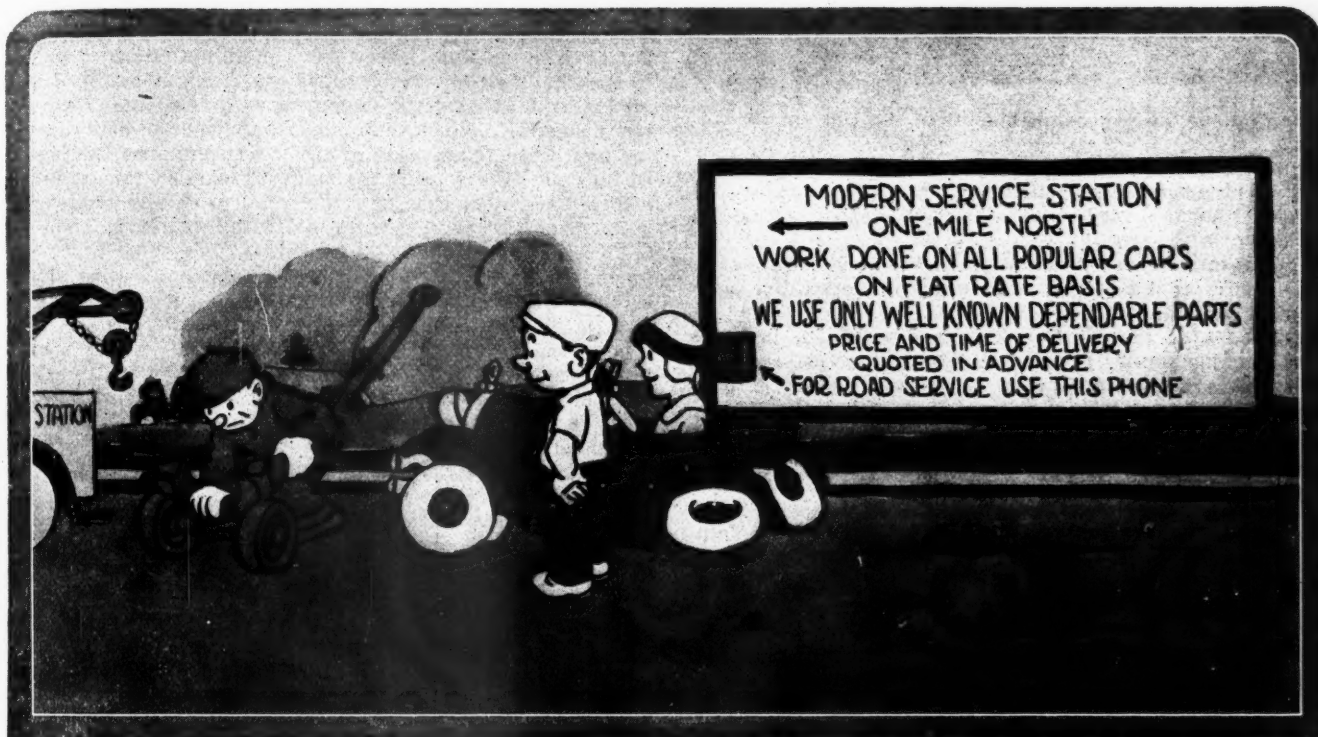
You can not ignore this great line of Maxwell-Chrysler. If you do not use it, you will necessarily have to buck it. And it is plain that more money can be made with success than against it. The ability to see a great chance and to seize it, is often the only difference between success and failure.

MAXWELL MOTOR SALES CORPORATION, DETROIT, MICHIGAN
CHRYSLER MOTOR CORPORATION, DETROIT, MICHIGAN

The Chrysler Six

Pronounced as though spelled, Crf-sler

MOTOR AGE



Making Service a Profitable Commodity

A. E. A. Shows How in Maintenance Picture Released at New Orleans Convention—Harvard Survey Shows Jobbers' Expenses Too High—Commissioner Webster to Retire

By SAM SHELTON

Illustrated with "stills" from the new A. E. A. Maintenance film

PROFITABLE sale of automotive merchandise and service was the common ground from which dealers, jobbers and manufacturers looked with interest upon the activities of the spring convention of the Automotive Equipment Association last week at New Orleans.

This convention, continuing from Monday morning until Saturday noon, was marked by definite progressive action on some questions and consideration of others of vital importance to all branches of the automotive industry—car dealers, manufacturers, garagemen, repair shop proprietors, accessory dealers and jobbers. As a result of the steps taken at this convention it is the belief of many of

those who attended that the activities of the association this year will be of more value to the industry than ever before in the history of the organization. Out of this meeting there appears to have developed a better understanding between automotive equipment manufacturers and their direct customers, the jobbers, and it looks as if both manufacturer and jobber are prepared to go further than ever before in directly helping the dealer to be a better merchant.

About 135 manufacturing members and about 100 jobber members participated in the meeting and the delegates, alternates and guests brought the total attendance up to more than 400.



Among outstanding accomplishments of the convention were these:

Launching of the Profitable Maintenance Campaign of the A. E. A. merchandising committee as a continuation and development of the very successful merchandising activities carried on in the past.

Steps toward the cooperation of all trade organizations in the industry to guide the distribution of automotive merchandise through established channels.

Instruction to the merchandising committee to install a store planning service to assist dealers in the best and most attractive arrangement of their stores and display of their stocks.

Recommendation that all manufacturers in the association place the A. E. A. emblem on all boxes and cartons in which their products are packed.

Approval of cooperation by the association in the National Automotive Service Convention and the Automotive Maintenance Equipment Show to be held concurrently in Detroit, May 19 to 23.

Preliminary report of the Bureau of Business Research of Harvard University showing the jobbers' cost of doing business is unusually high as compared with other lines and should be reduced if competition is to be successfully met.

In addition to these activities there was a meeting of the Service Equipment Associates for consideration of questions of special interest to the manufacturers and users of equipment for automotive repair and maintenance shops. The Service Equipment Associates is an organization of A. E. A. members who are engaged in the manufacture of shop equipment for the maintenance of motor vehicles. The Service Equipment Associates adopted a resolution approving the profitable maintenance campaign launched by the A. E. A. merchandising committee.

A surprise to the convention was the announcement by Commissioner William M. Webster of his intention to retire at the end of the 1925 fall convention and show. The Commissioner stated that the time had come when he felt that he should give more time to his family and to travel and study and that in order to carry out this plan he would have to give up the A. E. A. work unless he could relieve himself of some other duties. Mr. Webster has been commissioner and chief executive officer of the association ever since it was founded nine years ago and has built it up into one of the strongest trade associations in the country. Before adjournment the convention expressed by rising vote its gratitude to the Commissioner, affectionately called "The Chief," and the hope that he would not find it necessary to abandon the A. E. A. post.

The entertainment of the visiting delegates and guests was carried out efficiently and agreeably by the New Orleans committee of which Percival Stern was chairman. Golf, tours of the city, a boat ride on the Mississippi and through the new industrial canal connecting the river with Lake Ponchartrain, and cards and dancing were features of the entertainment.

Inauguration of the "Profitable Maintenance" merchandising campaign was featured by the appearance of three retail dealers before the convention. These dealers related how they have profited in the past through application of the educational features promulgated by the merchandising committee. After

the showing of the new motion picture entitled "Profitable Maintenance," these dealers were introduced.

T. O. Thomas of Paducah, Ky., told how he started in the automotive business in 1920 as a car dealer with an investment of \$17,000 which by the beginning of 1922 had been reduced to \$5,000. At that time he was interested in the merchandising work of the A. E. A. through a jobber's salesman and he stated that he has now rebuilt his capital up to \$12,000 and is making money regularly.

Another dealer who related his experience was Lewis Gottlieb of Baton Rouge, La. He also is a car dealer but carries a stock of automotive accessories and equipment which he turns over on the average of once a month with a handsome profit. Mr. Gottlieb was the winner of second prize of \$100 in the Christmas window contest conducted by the A. E. A. last December.

The third dealer who spoke was Charles D. Pique, general manager of the Gus D. Revol Co., of New Orleans, distributor of the Cadillac. Mr. Pique spoke especially of the opportunity for the profitable sale of equipment with new cars. He worked out a standard list of additional equipment for new cars with the aggregate retail price of \$156. The first year 97 per cent of the new cars sold by his company carried this equipment. Still later another item of rather high price was added and 75 per cent of the new cars were sold with this item in addition to the original list of added equipment.

Other talks on the merchandising campaigns were made by representatives of jobbers who have found it profitable to put men in the field to work exclusively with dealers in the promotion of sales through the A. E. A. methods. These speakers were Henry Kirkland of Cumings Bros., Flint, Mich., and George Brusch of Ozburn-Abston & Co., of Memphis, Tenn.

Mr. Kirkland went into the field among the dealers last December with the film on "Something for the Car for Christmas," and he declared that in the one month his company added 418 new customers with an average purchase of \$128. Following up this campaign, he reported that practically all of the dealers who cooperated sold the goods they bought for the holiday trade. After the holidays he continued the merchandising campaign with the "Ask 'Em to Buy" and "Shop Profits" films and he stated that up to date his company has added 1,000 new accounts through this work.

Mr. Brusch told of having conducted 486 meetings in the South for dealers at an expense to his company of more than \$42,000 with highly gratifying results in the increase of sales. He told of many dealers who have reported sales gains of 50 to 100 per cent which they attribute to cooperation in the A. E. A. campaigns.

The introductory statement of the profitable maintenance campaign was made in an address by Arthur R. Mogge, merchandising director of the A. E. A. Mr. Mogge called attention to figures collected by the Chilton Company showing that out of 63,000 automotive repair shops in the United States and Canada approximately 36,000 are independent of any new car sales agency while the remaining 27,000 are connected with the service departments of new car dealers.



Mr. Mogge showed that the volume expended for the maintenance and operation of motor vehicles in 1923 exceeded the total expenditure in that year for new cars and trucks. Again quoting figures collected by the Chilton Company he stated that expenditures for maintenance and operation were approximately as follows:

| | |
|---------------------------|----------------|
| Accessories | \$ 241,000,000 |
| Replacement parts..... | 655,000,000 |
| Labor on repair work..... | 910,000,000 |
| Tires and tubes..... | 750,000,000 |
| Gasoline and oil..... | 1,000,000,000 |

New cars and trucks produced and sold during the year numbered more than 4,000,000 and had a wholesale value of approximately \$3,000,000,000.

It is to the vast field of profit for dealer, jobber and manu-

facturer that the profitable maintenance campaign is directed. The motion picture film, entitled "Profitable Maintenance," which was shown to the members for the first time and heartily applauded, undertakes to show by animated cartoons the importance of the repair shop selling and installing dependable parts and doing the work right on a flat rate basis.

The story of this motion picture was told in March 27 issue of MOTOR AGE and scenes from it are reproduced in this issue.

The matter of cooperation of various associations to better guide the distribution of automotive merchandise through established channels was brought up by President William E. Wissler in his opening address. It was stated that certain manufacturers of automotive equipment selling items to car manufacturers have been accustomed to sell larger quantities to the car manufacturers than are needed for regular car pro-

Pick 'Em Out!

On the Next Page Are Pictures of the Following Principals at the Convention

1—E. J. Hiebel, Chanslor & Lyon Co., San Francisco; Carl E. Palmen, Parker & Waterman Mfg. Co., Los Angeles.

2—Martin E. Goldman, Forest Electric Co., Newark, N. J.; Stanley K. Wallace, G. Norman Baughman Co., Tampa, Fla.

3—Sitting: L. A. Sacord, McQuay-Norris Mfg. Co., St. Louis; standing, left to right: H. Franklin Libby, manufacturers agent, Kansas City; C. M. Bunnell, Pyrene Mfg. Co., Newark, N. J.; B. M. Asch, Asch & Co., New York.

4—Sitting, left to right: J. H. Brooks, Bridgeport Brass Co., Bridgeport, Conn.; P. D. Parker, Edison Lamp Works, Harrison, N. J.; Lee Freudenthal, Champion Spark Plug Co., Toledo; standing: Chester Boynton, Asch & Co., New York; M. C. Dewitt, Champion Spark Plug Co., Toledo; George Fritz, Steidle Mfg. Co., Cincinnati; H. M. Smith, Manley Mfg. Co., York, Pa.

5—Sitting, left to right: Paul M. Vogel, Trico Products Corp., Buffalo; William R. Johnston, Johnston Products Corp., Chicago; M. S. Gooderham, Toronto Auto Accessories, Ltd., Toronto; standing: W. Bauer, Pyrene Mfg. Co., Newark, N. J.; H. E. Beard, Perfection Heater Co., Cleveland; W. S. Isherwood, A. C. Spark Co., Flint, Mich.

6—Sitting, left to right: W. C. Lewis, Lewis Automotive Equipment Co., Worcester, Mass.; A. E. Goodby, Goodby Rankin Co., Providence, R. I.; Fred C. Linscott, Linscott Supply Co., Boston; standing: B. Rockman, George Collins Co., Boston; Frank J. Murray, Post & Lester Co., Boston; A. Antkes, James Martin Corp., New York.

7—Sitting, left to right: W. McP. Smith and W. O. Banta, Spencer-Smith Mfg. Co., Howell, Mich.; M. D. Graham, Cumings Bros., Flint, Mich.; standing: H. D. Willcutts, Spencer-Smith Mfg. Co.; Henry Kirkland, Cumings Bros.

8 and 9—A. S. Lenhart and Wm. F. Edwards, Goodrich-Lenhart Mfg. Co., Hamburg, Pa.

10—J. C. Yordon and Robert S. Replogle, Laminated Shim Co., Long Island City; R. A. Pickard, Metal Stamping Co., Long Island City.

11—Sitting, left to right: F. G. Rodenbeck, Bunting Brass & Bronze Co., Toledo; P. E. Atwater, Toledo Steel Products Co., Toledo; A. R. Mosler, Mosler Metal Products Corp., Mt. Vernon, N. Y.; standing: Robert W. Martland, manager, California Automotive Trades Association, Oakland, Cal.; V. E. Crawford, Toledo Steel Products Co., Toledo; M. H. Tisne, A. Schroeder's Sons, Brooklyn, N. Y.; H. E. Whitney, Dover Stamping & Mfg. Co., Cambridge, Mass.

12—Left to right: R. B. Lawrence, The Banta Co., Los Angeles; Mrs. Mehan; J. H. Mehan, manager, Research Club, Chicago; Mrs. Lawrence; Elton Seager, Pennsylvania Rubber & Supply Co., Cleveland; Mrs. Seager.

13—Left to right: J. A. Blum, T. T. Hutchinson Co., Wheeling, W. Va.; Helen Wingerter; Mrs. Blum; Mrs. Shepherd; H. F. Shepherd, Motor Car Supply Co., Charleston, W. Va.

14—D. S. Brisbin, Columbus-McKinnon Chain Co., Co-

lumbus, O.; A. R. Cooper, Bastain-Blessing Co., Chicago; Warren J. Shay, Columbus-McKinnon Chain Co.; Wallace G. Page, American Motor Equipment Co., Boston; Mrs. Williams; T. M. Williams, Peaslee-Gaulbert Co., Louisville, Ky.; W. A. White, Orr Iron Co., Evansville, Ind.

15—Left to right: D. D. Weiss, Motor Accessories Co., Philadelphia; Mrs. Weiss; Mrs. H. E. Patterson; Mrs. L. D. Patterson, X Laboratories, New York; F. Ham Sutter, Shadbolt & Boyd Iron Co., Milwaukee; Mrs. J. Neaylon, Chicago; H. E. Patterson, Warner-Patterson Co., Chicago.

16—Lower row, left to right: Mrs. P. Q. Wray, P. Q. Wray, George H. Rives Co., Chicago; Mrs. Mile; Mrs. Robert Crowe, Crowe-Burlingame Co., Little Rock, Ark.; upper row: Mrs. Sidney S. Stern, New York; Robert Roseberry, Universal Tool Co., Garwood, N. J.; L. J. Mile, Russell Mfg. Co., Middletown, Conn.

17—Lower row: R. W. Procter, Black & Decker Mfg. Co., Baltimore; Charles Hofman, manufacturers' agent, St. Louis; J. M. LaBelle, Kansas City; upper row: Mrs. LaBelle; Mrs. Procter; Mrs. Hofman.

18—Left to right: W. M. Wheeler, American Chain Co., Bridgeport, Conn.; Otto E. Berger, J. J. Bantlin Co., Cincinnati; E. B. Collins, Collins Co., Danville, Ill.; E. L. Chase, Graton & Knight Co., Worcester, Mass.; A. G. Perez, Burton-Rogers Co., Austin, Tex.

19—Left to right: C. Albracht, K-W Ignition Co., Cleveland; Mrs. Albracht; Mrs. Van Horn; T. H. Van Horn, Harvey Spring Co., Racine, Wis.

20—Left to right: R. A. Crooker, Columbus-McKinnon Chain Co., Columbus, O.; J. D. Cole, General Automotive Corp., Chicago; A. Bowman, Bowman Bros., Ltd., Saskatoon, Canada; Walter Weinstock, Weinstock-Nichols Co., San Francisco; W. F. Parker, Packard Electric Co., Warren, O.; H. M. Johnson, Circelite Co., Chicago; G. P. Rogers, Kant Rust Corp., Rahway, N. J.; H. C. Mealey, Federal Lamp Division, General Electric Works, Schenectady, N. Y.; G. A. Shipley, French Battery & Carbon Co., Madison, Wis.

21—Left to right: J. W. Nock, George W. Nock, Inc., Philadelphia; Ralph J. Cahall, Cahall Motor Supply Co., Philadelphia; E. J. Smith, Gill Mfg. Co., Chicago; E. C. Guthard, Lincoln Products Co., Chicago; T. S. Stevenson, French Battery & Carbon Co., Madison, Wis.

22—Left to right: T. M. Glasgow, Glasgow-Stewart Co., Charlotte, N. C.; R. S. Mitten, Black & Decker Mfg. Co., Baltimore; Frank T. Chase, Romort Mfg. Co., Chicago; Frank T. Chase, Jr.; Mrs. Chase; B. D. Zimmerman, Milwaukee Motor Products, Inc., Milwaukee; R. W. Smith, National Standard Co., Niles, Mich.; F. T. Tenk, Tenk Hardware Co., Quincy, Ill.

24—Left to right: N. F. Rosasco, Rudolph & West Co., Washington, D. C.; Mrs. Rosasco; H. L. Stevenson, Motor Car Supply Co., Phoenix, Ariz.; Mrs. Wilson; C. C. Wilson, Marquette Mfg. Co., St. Paul; Mrs. Stevenson; Mrs. Hennecke; E. V. Hennecke, Motor-Meter Co., Long Island City.

25—Paul Acton, No-Leak-O Piston Ring Co., Muskegon, Mich.; H. Futterman, Superior Lamp Mfg. Co., New York.

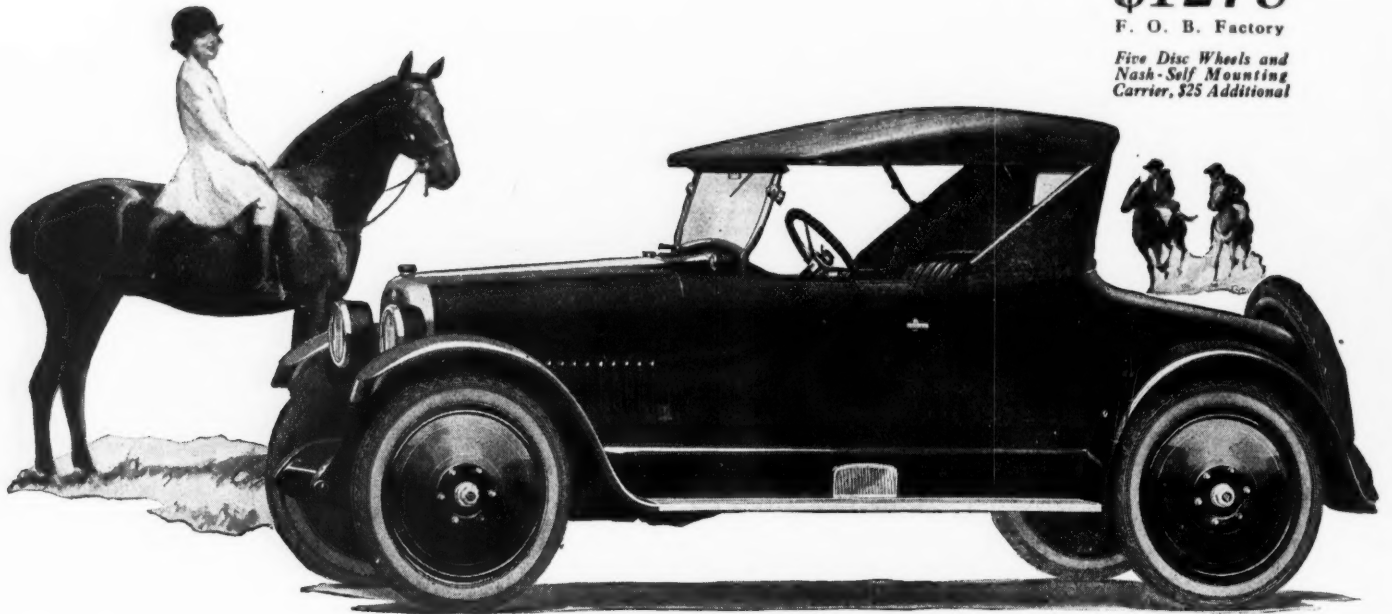
NASH

The Six Roadster

\$1275

F. O. B. Factory

*Five Disc Wheels and
Nash-Self Mounting
Carrier, \$25 Additional*



Nash Dealers Find that a Complete Line Builds Both Volume and Profits

There's no doubt but that having a complete line like the Nash is an invaluable asset.

It helps a dealer definitely and substantially in two important ways.

First, it enables him to build up a bigger volume of sales because it widens his market.

Secondly, it enables him to earn greater profits because he does not lose sales that a dealer with a short line must forego.

An illustration of this is afforded by the Nash Six Roadster pictured above.

Some dealers are without a Roadster. If a prospect has his mind set on a Roadster these dealers can't sell him.

But the Nash dealer makes the sale—and the profit and a satisfied customer.

At the low price of \$1275 f. o. b. factory this Roadster is a real drawing card.

Built low to the road, smartly attractive in appearance, and toned a beautiful Sky Blue, it attracts attentive admiration even when contrasted with costly custom-built conceptions.

Among its many features are grey Spanish leather upholstery; two big luggage compartments, one back of driver's seat and one beneath rear deck; automatic windshield wiper; one-piece windshield; kick-plates; and rear-view mirror.

Part of being a good merchant is in having the merchandise people want.

If you're beginning to suffer from the disadvantages of a short line why not talk to us about the Nash complete line and a good territory?

(2987)

The Nash Motors Company, Kenosha, Wis.

We are Helping Our Dealers Build A Profitable Accessory Business



The following certified accessories specially designed for perfect fit and quick installation on the Oldsmobile Six, can be procured from any Oldsmobile dealer in the U. S. at these net prices, complete with necessary attachments:

| | | |
|-------------------------------------|-------|---------|
| Front Bumper | • • • | \$15.00 |
| Rear Standard Bumper | | 15.00 |
| Rear Sport Bumper | | 15.00 |
| Radiator Cap, with Bars | | 2.50 |
| Road Spot Light | • • | 5.00 |
| Windshield Cleaner | • | 1.25 |
| Rear View Mirror | • | 1.75 |
| Trunk Rails (set of four) | | 6.80 |
| Sport Tire Carrier | • • | 7.50 |
| Trunk Platform | • • | 7.00 |
| Enameled Steel Trunk | | 25.00 |
| Windshield Wings (pair) | | 17.00 |
| Running Board Step Plates (pair) | • • • | 4.75 |

Genuine Oldsmobile parts can be purchased from any Oldsmobile dealer in any part of the United States, at a standard price established by the factory, without the addition of any war tax, handling, or transportation charges. Every Oldsmobile dealer has a master parts price list issued by us, which is always open for owners' inspection.

Here's another advantage Oldsmobile dealers have—we are providing them with a high-grade line of accessories, specially designed for perfect fit and quick installation on the Oldsmobile Six.

We are advertising that these accessories, complete with necessary attachments, can be bought from any Oldsmobile dealer in the United States at low net prices established by the factory. Our service parts are now handled in the same way.

No need to tell about the profits of the accessory business. You know that the profits are there, and you know too that your competitor, the accessory dealer, is getting most of them. Now Oldsmobile dealers can enjoy this extra business with extra profits. Be an Oldsmobile dealer.

OLDS MOTOR WORKS, LANSING, MICHIGAN
Olds Motor Works of Canada Ltd., Oshawa, Ontario

OLDSMOBILE ~ SIX

PRODUCT OF GENERAL MOTORS

The Good MAXWELL

Use It Or Fight It

Every automobile dealer in America will either use the Maxwell-Chrysler line for his own success, or he will have to fight it.

No group or combination is so strong today in sales possibilities, and money making possibilities, as the Maxwell-Chrysler.

No other line enables the dealer to appeal logically and successfully to so large a percentage of all the motor car buyers of America with such quick capital turnover; such a high ratio of quick assets; or so small a capital risk.

The sales possibilities and merchandising opportunities are plain, of course. To the superficial thinker, this seems merely very desirable.

In reality it is much more.

It means that the Maxwell-Chrysler dealer need carry only two lines to meet the competition of five or six others—each of whom has as much money tied up as the Maxwell-Chrysler dealer, and only half the possible volume.

It means that stocks can be kept more liquid and turned over oftener, because

the Maxwell-Chrysler dealer can get carload freight rates on a mixed car of Maxwells and Chryslers.



The Maxwell Flat Rate Guaranteed Service System helps him to make a profit on repairs—and at the same time to charge the customer less. It is the most advanced service plan in the entire industry. It includes a complete service department accounting system, and is simple and

economical in operation.

And above and beyond all these advantages the Maxwell-Chrysler dealer is protected and helped by a great and powerful organization that values the friendship of its dealers and is committed to the policy of insuring that its dealers make money.

You can not ignore this great line of Maxwell-Chrysler. If you do not use it, you will necessarily have to buck it. And it is plain that more money can be made with success than against it. The ability to see a great chance and to seize it, is often the only difference between success and failure.

MAXWELL MOTOR SALES CORPORATION, DETROIT, MICHIGAN
CHRYSLER MOTOR CORPORATION, DETROIT, MICHIGAN

The Chrysler Six

Pronounced as though spelled, Crf-sler

MOTOR AGE



Making Service a Profitable Commodity

A. E. A. Shows How in Maintenance Picture Released at New Orleans Convention—Harvard Survey Shows Jobbers' Expenses Too High—Commissioner Webster to Retire

By SAM SHELTON

Illustrated with "stills" from the new A. E. A. Maintenance film

PROFITABLE sale of automotive merchandise and service was the common ground from which dealers, jobbers and manufacturers looked with interest upon the activities of the spring convention of the Automotive Equipment Association last week at New Orleans.

This convention, continuing from Monday morning until Saturday noon, was marked by definite progressive action on some questions and consideration of others of vital importance to all branches of the automotive industry—car dealers, manufacturers, garagemen, repair shop proprietors, accessory dealers and jobbers. As a result of the steps taken at this convention it is the belief of many of

those who attended that the activities of the association this year will be of more value to the industry than ever before in the history of the organization. Out of this meeting there appears to have developed a better understanding between automotive equipment manufacturers and their direct customers, the jobbers, and it looks as if both manufacturer and jobber are prepared to go further than ever before in directly helping the dealer to be a better merchant.

About 135 manufacturing members and about 100 jobber members participated in the meeting and the delegates, alternates and guests brought the total attendance up to more than 400.



Among outstanding accomplishments of the convention were these:

Launching of the Profitable Maintenance Campaign of the A. E. A. merchandising committee as a continuation and development of the very successful merchandising activities carried on in the past.

Steps toward the cooperation of all trade organizations in the industry to guide the distribution of automotive merchandise through established channels.

Instruction to the merchandising committee to install a store planning service to assist dealers in the best and most attractive arrangement of their stores and display of their stocks.

Recommendation that all manufacturers in the association place the A. E. A. emblem on all boxes and cartons in which their products are packed.

Approval of cooperation by the association in the National Automotive Service Convention and the Automotive Maintenance Equipment Show to be held concurrently in Detroit, May 19 to 23.

Preliminary report of the Bureau of Business Research of Harvard University showing the jobbers' cost of doing business is unusually high as compared with other lines and should be reduced if competition is to be successfully met.

In addition to these activities there was a meeting of the Service Equipment Associates for consideration of questions of special interest to the manufacturers and users of equipment for automotive repair and maintenance shops. The Service Equipment Associates is an organization of A. E. A. members who are engaged in the manufacture of shop equipment for the maintenance of motor vehicles. The Service Equipment Associates adopted a resolution approving the profitable maintenance campaign launched by the A. E. A. merchandising committee.

A surprise to the convention was the announcement by Commissioner William M. Webster of his intention to retire at the end of the 1925 fall convention and show. The Commissioner stated that the time had come when he felt that he should give more time to his family and to travel and study and that in order to carry out this plan he would have to give up the A. E. A. work unless he could relieve himself of some other duties. Mr. Webster has been commissioner and chief executive officer of the association ever since it was founded nine years ago and has built it up into one of the strongest trade associations in the country. Before adjournment the convention expressed by rising vote its gratitude to the Commissioner, affectionately called "The Chief," and the hope that he would not find it necessary to abandon the A. E. A. post.

The entertainment of the visiting delegates and guests was carried out efficiently and agreeably by the New Orleans committee of which Percival Stern was chairman. Golf, tours of the city, a boat ride on the Mississippi and through the new industrial canal connecting the river with Lake Ponchartrain, and cards and dancing were features of the entertainment.

Inauguration of the "Profitable Maintenance" merchandising campaign was featured by the appearance of three retail dealers before the convention. These dealers related how they have profited in the past through application of the educational features promulgated by the merchandising committee. After

the showing of the new motion picture entitled "Profitable Maintenance," these dealers were introduced.

T. O. Thomas of Paducah, Ky., told how he started in the automotive business in 1920 as a car dealer with an investment of \$17,000 which by the beginning of 1922 had been reduced to \$5,000. At that time he was interested in the merchandising work of the A. E. A. through a jobber's salesman and he stated that he has now rebuilt his capital up to \$12,000 and is making money regularly.

Another dealer who related his experience was Lewis Gottlieb of Baton Rouge, La. He also is a car dealer but carries a stock of automotive accessories and equipment which he turns over on the average of once a month with a handsome profit. Mr. Gottlieb was the winner of second prize of \$100 in the Christmas window contest conducted by the A. E. A. last December.

The third dealer who spoke was Charles D. Pique, general manager of the Gus D. Revol Co., of New Orleans, distributor of the Cadillac. Mr. Pique spoke especially of the opportunity for the profitable sale of equipment with new cars. He worked out a standard list of additional equipment for new cars with the aggregate retail price of \$156. The first year 97 per cent of the new cars sold by his company carried this equipment. Still later another item of rather high price was added and 75 per cent of the new cars were sold with this item in addition to the original list of added equipment.

Other talks on the merchandising campaigns were made by representatives of jobbers who have found it profitable to put men in the field to work exclusively with dealers in the promotion of sales through the A. E. A. methods. These speakers were Henry Kirkland of Cumings Bros., Flint, Mich., and George Brusch of Ozburn-Abston & Co., of Memphis, Tenn.

Mr. Kirkland went into the field among the dealers last December with the film on "Something for the Car for Christmas," and he declared that in the one month his company added 418 new customers with an average purchase of \$128. Following up this campaign, he reported that practically all of the dealers who cooperated sold the goods they bought for the holiday trade. After the holidays he continued the merchandising campaign with the "Ask 'Em to Buy" and "Shop Profits" films and he stated that up to date his company has added 1,000 new accounts through this work.

Mr. Brusch told of having conducted 486 meetings in the South for dealers at an expense to his company of more than \$42,000 with highly gratifying results in the increase of sales. He told of many dealers who have reported sales gains of 50 to 100 per cent which they attribute to cooperation in the A. E. A. campaigns.

The introductory statement of the profitable maintenance campaign was made in an address by Arthur R. Mogge, merchandising director of the A. E. A. Mr. Mogge called attention to figures collected by the Chilton Company showing that out of 63,000 automotive repair shops in the United States and Canada approximately 36,000 are independent of any new car sales agency while the remaining 27,000 are connected with the service departments of new car dealers.



Mr. Mogge showed that the volume expended for the maintenance and operation of motor vehicles in 1923 exceeded the total expenditure in that year for new cars and trucks. Again quoting figures collected by the Chilton Company he stated that expenditures for maintenance and operation were approximately as follows:

| | |
|---------------------------|----------------|
| Accessories | \$ 241,000,000 |
| Replacement parts..... | 655,000,000 |
| Labor on repair work..... | 910,000,000 |
| Tires and tubes..... | 750,000,000 |
| Gasoline and oil..... | 1,000,000,000 |

New cars and trucks produced and sold during the year numbered more than 4,000,000 and had a wholesale value of approximately \$3,000,000,000.

It is to the vast field of profit for dealer, jobber and manu-

facturer that the profitable maintenance campaign is directed. The motion picture film, entitled "Profitable Maintenance," which was shown to the members for the first time and heartily applauded, undertakes to show by animated cartoons the importance of the repair shop selling and installing dependable parts and doing the work right on a flat rate basis.

The story of this motion picture was told in March 27 issue of MOTOR AGE and scenes from it are reproduced in this issue.

The matter of cooperation of various associations to better guide the distribution of automotive merchandise through established channels was brought up by President William E. Wissler in his opening address. It was stated that certain manufacturers of automotive equipment selling items to car manufacturers have been accustomed to sell larger quantities to the car manufacturers than are needed for regular car pro-

Pick 'Em Out!

On the Next Page Are Pictures of the Following Principals at the Convention

1—E. J. Hiebel, Chanslor & Lyon Co., San Francisco; Carl E. Palmen, Parker & Waterman Mfg. Co., Los Angeles.

2—Martin E. Goldman, Forest Electric Co., Newark, N. J.; Stanley K. Wallace, G. Norman Baughman Co., Tampa, Fla.

3—Sitting: L. A. Sacord, McQuay-Norris Mfg. Co., St. Louis; standing, left to right: H. Franklin Libby, manufacturers agent, Kansas City; C. M. Bunnell, Pyrene Mfg. Co., Newark, N. J.; B. M. Asch, Asch & Co., New York.

4—Sitting, left to right: J. H. Brooks, Bridgeport Brass Co., Bridgeport, Conn.; P. D. Parker, Edison Lamp Works, Harrison, N. J.; Lee Freudenthal, Champion Spark Plug Co., Toledo; standing: Chester Boynton, Asch & Co., New York; M. C. Dewitt, Champion Spark Plug Co., Toledo; George Fritz, Steidle Mfg. Co., Cincinnati; H. M. Smith, Manley Mfg. Co., York, Pa.

5—Sitting, left to right: Paul M. Vogel, Trico Products Corp., Buffalo; William R. Johnston, Johnston Products Corp., Chicago; M. S. Gooderham, Toronto Auto Accessories, Ltd., Toronto; standing: W. Bauer, Pyrene Mfg. Co., Newark, N. J.; H. E. Beard, Perfection Heater Co., Cleveland; W. S. Isherwood, A. C. Spark Co., Flint, Mich.

6—Sitting, left to right: W. C. Lewis, Lewis Automotive Equipment Co., Worcester, Mass.; A. E. Goodby, Goodby Rankin Co., Providence, R. I.; Fred C. Linscott, Linscott Supply Co., Boston; standing: B. Rockman, George Collins Co., Boston; Frank J. Murray, Post & Lester Co., Boston; A. Antkes, James Martin Corp., New York.

7—Sitting, left to right: W. McP. Smith and W. O. Banta, Spencer-Smith Mfg. Co., Howell, Mich.; M. D. Graham, Cumings Bros., Flint, Mich.; standing: H. D. Willcuts, Spencer-Smith Mfg. Co.; Henry Kirkland, Cumings Bros.

8 and 9—A. S. Lenhart and Wm. F. Edwards, Goodrich-Lenhart Mfg. Co., Hamburg, Pa.

10—J. C. Yordon and Robert S. Replogle, Laminated Shim Co., Long Island City; R. A. Pickard, Metal Stamping Co., Long Island City.

11—Sitting, left to right: F. G. Rodenbeck, Bunting Brass & Bronze Co., Toledo; P. E. Atwater, Toledo Steel Products Co., Toledo; A. R. Mosler, Mosler Metal Products Corp., Mt. Vernon, N. Y.; standing: Robert W. Martland, manager, California Automotive Trades Association, Oakland, Cal.; V. E. Crawford, Toledo Steel Products Co., Toledo; M. H. Tisne, A. Schroeder's Sons, Brooklyn, N. Y.; H. E. Whitney, Dover Stamping & Mfg. Co., Cambridge, Mass.

12—Left to right: R. B. Lawrence, The Banta Co., Los Angeles; Mrs. Mehan; J. H. Mehan, manager, Research Club, Chicago; Mrs. Lawrence; Elton Seager, Pennsylvania Rubber & Supply Co., Cleveland; Mrs. Seager.

13—Left to right: J. A. Blum, T. T. Hutchinson Co., Wheeling, W. Va.; Helen Wingerter; Mrs. Blum; Mrs. Shepherd; H. F. Shepherd, Motor Car Supply Co., Charleston, W. Va.

14—D. S. Brisbin, Columbus-McKinnon Chain Co., Co-

lumbus, O.; A. R. Cooper, Bastain-Blessing Co., Chicago; Warren J. Shay, Columbus-McKinnon Chain Co.; Wallace G. Page, American Motor Equipment Co., Boston; Mrs. Williams; T. M. Williams, Peaslee-Gaulbert Co., Louisville, Ky.; W. A. White, Orr Iron Co., Evansville, Ind.

15—Left to right: D. D. Weiss, Motor Accessories Co., Philadelphia; Mrs. Weiss; Mrs. H. E. Patterson; Mrs. L. D. Patterson, X Laboratories, New York; F. Ham Sutter, Shadbolt & Boyd Iron Co., Milwaukee; Mrs. J. Neaylon, Chicago; H. E. Patterson, Warner-Patterson Co., Chicago.

16—Lower row, left to right: Mrs. P. Q. Wray, P. Q. Wray, George H. Rives Co., Chicago; Mrs. Miley; Mrs. Robert Crowe, Crowe-Burlingame Co., Little Rock, Ark.; upper row: Mrs. Sidney S. Stern, New York; Robert Roseberry, Universal Tool Co., Garwood, N. J.; L. J. Miley, Russell Mfg. Co., Middletown, Conn.

17—Lower row: R. W. Procter, Black & Decker Mfg. Co., Baltimore; Charles Hofman, manufacturers' agent, St. Louis; J. M. LaBelle, Kansas City; upper row: Mrs. LaBelle; Mrs. Procter; Mrs. Hofman.

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24—Left to right: N. F. Rosasco, Rudolph & West Co., Washington, D. C.; Mrs. Rosasco; H. L. Stevenson, Motor Car Supply Co., Phoenix, Ariz.; Mrs. Wilson; C. C. Wilson, Marquette Mfg. Co., St. Paul; Mrs. Stevenson; Mrs. Hennecke; E. V. Hennecke, Motor-Meter Co., Long Island City.

25—Paul Acton, No-Leak-O Piston Ring Co., Muskegon, Mich.; H. Futterman, Superior Lamp Mfg. Co., New York.

Prominent Figures in A. E. A.



22



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Convention at Crescent City



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duction, and that the surplus finds its way into the retail market at prices much lower than the dealers have to pay the jobbers for the same merchandise. Manufacturers discussing this in their divisional meeting were of the opinion that the regularly established wholesale distributing organizations should be protected and encouraged in the handling of accessories and equipment. It was voted to appoint a committee of five manufacturers and five jobbers to confer with representatives of other associations in the industry with the object of bringing about better understanding as to the accepted and general means of distribution, keeping in mind the matters of convenience and service to the retail dealer or shop.

The suggestion was made from the floor of the manufacturers' divisional meeting on Wednesday that the establishment of a store planning department should be undertaken by the merchandising committee. The convention voted to recommend such a service be provided and the merchandising committee stated steps would be taken to carry out the recommendation. It was suggested that such a department would be able to help dealers with the layout and arrangement of their stores and window displays in such a manner as would be attractive and helpful in the selling of automotive merchandise.

The preliminary report of the Bureau of Business Research of Harvard University on the jobbers' cost of doing business was one of the most interesting and important events of the convention. This report is of interest to every retail dealer, for it shows him where the jobber's margin goes and it is of especial importance to the jobber and manufacturer, for it shows that without doubt steps should be taken to reduce the cost of operation.

In explanation of the report, M. P. McNair, assistant director of the bureau, who compiled it and presented it, stated that an era of intense competition is at hand which will compel a reduction of costs. The study upon which the report was based was authorized by the A. E. A. at its convention in Chicago last November. The report covered returns from 81 firms out of a total of about 225 jobber members. A complete report in which returns from other members will be included will be published later. Mr. McNair stated, however, that he does not expect the results to be materially different from those already arrived at.

This report revealed that the average net profit of the firms reporting for 1923 was 1.3 per cent on the total volume of sales. The total expense of doing business was 23.9 per cent of total sales and the gross margin of selling cost above buying cost was 25.2 per cent. These figures compare with 11.1 per cent in the wholesale grocery business and 16.3 per cent in the wholesale drug business for the total expense, and 11.6 and 17.2 per cent, respectively, for gross margin.

It was found that the average, or common figure for stock turnover by the automotive jobbers, is only three times a year as compared with 5.7 in the wholesale grocery trade and 3.6 in drugs.

Selling expense runs high in the automotive field as compared with the other two, being 9 per cent against 2.9 for

Report of Harvard Bureau of Business Research on Cost of Doing Business

Following is the preliminary summary on operating expenses, gross margin, net profit and stock-turn in the wholesale automotive equipment business in 1923 compared with wholesale grocery and wholesale drug business in 1922:

Net Sales = 100 Per Cent

| | Common Figures | | |
|--|----------------|-----------------|--------------|
| | Auto. Equip. % | Whls. Grocery % | Whls. Drug % |
| Total salesforce expense..... | 7.9 | 2.7 | 3.7 |
| Catalogue | 0.5 | — | — |
| Advertising | 0.3 | 0.05 | 0.1 |
| Other selling | 0.3 | 0.1 | 0.05 |
| Total selling | 9.0 | 2.9 | 3.9 |
| Wages of receiving and shipping force.. | 1.8 | 1.3 | 2.7 |
| Packing cases and wrappings..... | 0.2 | 0.05 | 0.2 |
| Outward freight, express and parcel postage | 0.2 | 0.6 | 0.4 |
| Outward truckage (including upkeep and depreciation) | 0.3 | — | — |
| Executive salaries (including buying).... | 2.3 | 1.1 | — |
| Office salaries, wages and bonuses..... | 2.6 | 0.9 | — |
| Total executive and office salaries..... | 4.9 | 2.0 | 3.7 |
| Office supplies, postage and stationery.. | 0.7 | 0.2 | 0.4 |
| Telephone and telegraph..... | 0.3 | 0.07 | — |
| Other buying, management, office..... | 0.4 | 0.3 | 0.3 |
| Rent | 1.1 | 0.5 | 0.8 |
| Heat, light, power and water..... | 0.2 | 0.07 | 0.14 |
| Taxes (except on buildings, income and autos) | 0.4 | 0.3 | 0.5 |
| Insurance (except on buildings and autos) | 0.3 | 0.2 | 0.2 |
| Repairs of equipment (except on buildings and autos)..... | 0.1 | 0.05 | 0.04 |
| Depreciation of equipment (except on buildings and autos)..... | 0.2 | 0.2 | 0.1 |
| Total interest | 2.4 | 1.7 | 2.1 |
| Miscellaneous expense | 0.7 | 0.2 | 0.4 |
| Losses from bad debts..... | 0.7 | 0.4 | 0.4 |
| Total warehouse, administrative and fixed charges | 14.9 | 8.2 | 12.4 |
| Total expense | 23.9 | 11.1 | 16.3 |
| Gross margin | 25.2 | 11.6 | 17.2 |
| Net profit | 1.3 | 0.5 | 0.9 |
| Stock-turn (times per year)..... | 3.0 | 5.7 | 3.6 |

Note—Comparisons necessarily incomplete at some points because of difference in standard forms of profit and loss statements for these three trades.

groceries and 3.9 for drugs. The study also revealed that the average annual sales per salesman, including store men, in the automotive wholesale field was \$38,000. In the wholesale grocery field the average is \$100,000. The total sales force expense of the automotive jobbers was 7.9 per cent, this figure including salaries, commissions and traveling expenses. The detailed report on the automotive jobbing business as compared with the grocery and drug trades is shown elsewhere.

Mr. McNair stated it was apparent from this study that an effort should be made to reduce the cost of distribution in the automotive industry. He said, however, that the abnormally high operating cost was partly due to the newness of the industry and special conditions within it. But it was his opinion that competition will compel a reduction.

It was pointed out by the speaker that the figures given were averages and that it would not be proper to conclude that they should apply to any particular product. He said, for instance, that the average gross margin should not be construed as being the right figure for all lines of products because the nature of the product would have to be considered.

Out of the 81 jobbers included in the report 24 showed a net loss, one as high as 7 per cent. The lowest operating cost reported by any jobber was 17 per cent and this jobber reported a net profit of more than 5 per cent.

A recommendation was adopted to the effect that manufacturing members should place the A. E. A. emblem on boxes and cartons in which their products are packed. It was considered that this would help the dealers in the selection of merchandise of the standard quality demanded by the A. E. A.

Unanimous indorsement by the convention was given to the coming service convention and service equipment show at Detroit. It was suggested that all A. E. A. manufacturers who are eligible to exhibit should be represented and the jobbers were urged to attend.

The meeting of the Service Equipment Associates on Wednesday evening was addressed by President Wissler and Commissioner Webster of the A. E. A., J. H. Mehan, manager of the Research Club, and G. W. Brogan. Various district representatives of the organization reported upon the progress made in the movement to have service equipment items segregated in jobbers' catalogs on goldenrod paper. Reports were that quite a number of jobbers have agreed to this plan.



In the general discussion on means that might be used to help the jobber sell show equipment it was suggested that one of the best methods would be to install a separate department in charge of a manager who would be able to help a garage or service station lay out and equip its shop in the most efficient way.

The Service Equipment Associates also adopted a resolution approving the Profitable Maintenance campaign of the A. E. A.

On one important subject the convention appeared to be devoid of ideas. This was the matter of flat rates. The question was submitted for discussion, how can the manufacturers assist the independent shops to operate on a flat rate and thus be in a position to compete on a reasonable basis with authorized service stations using a flat rate? There was no response to the suggestion that this topic be discussed.

The matter of automotive jobbers handling radio was brought up and both manufacturers' and jobbers' divisions voted that this practice should not be approved.

As to the management of the association steps were taken to change the constitution to provide for election of directors from zones by ballot rather than on the floor of the convention from nominations proposed by a committee as now practiced.

It was voted to hold the 1924 A. E. A. show at Chicago in November under the same rules as applied last year. This means that the show will be open only to members of the A. E. A. or to jobbers invited by the association.

Decision was reached to hold next year's spring convention at Colorado Springs in June provided hotel accommodations will be available. In case Colorado Springs is not available the convention probably will go to Portland, Ore.

It was unanimously decided that this year's experiment of

holding the convention in April will not be repeated. Although there was good attendance at this meeting, it was felt that a larger and more representative attendance can be obtained in June.

Bidding goodbye to New Orleans on Saturday night the delegates were practically unanimous on two points: The southern metropolis had shown them a wonderfully good time and the convention had accomplished more for the industry than any of its predecessors.

The A. E. A. Staff



Left to right: W. H. Stanley, catalog department; A. R. Mogge, merchandising director; Commissioner William M. Webster; Albert Swanson, auditor; B. W. Ruark, field secretary; E. E. Klewer, office manager

24-Hour Car Washing and Greasing Station

FOR a good many years there had been many places in Sacramento, Cal., where motorists could have their cars washed or greased. But it remained for Z. B. Jones of that city to capitalize on the idea that automobile washing and greasing is quite an industry in itself.

Jones arranged to have a building of pleasing architecture erected especially for his needs. California weather is mild so the front was left wide open with no doors. This made the place more inviting, more novel and helped considerably on handling cars and improving the light. As all-night service is maintained there was no need for doors.

To further improve the appearance of the business and to make it easy to move cars around and get at them Jones had the entire floor left open. The only partitions in the entire building are those of the office and these do not run to the ceiling.



Adequate equipment, reliable, uniformed help and fast service are doing the rest. Jones figures he is attracting much trade that, due to the fact car

washing and greasing usually has been performed in the dark recesses of a shop, he never would have secured had he followed the conventional system.

Servicing the Ford Powerplant

How to Remove the Engine from the Car, Dismantle It and Perform the Necessary Service Operations on Cylinders, Pistons, Piston Pins, Rings, Crankshaft, Camshaft, Bearings and Transmission

By B. M. IKERT

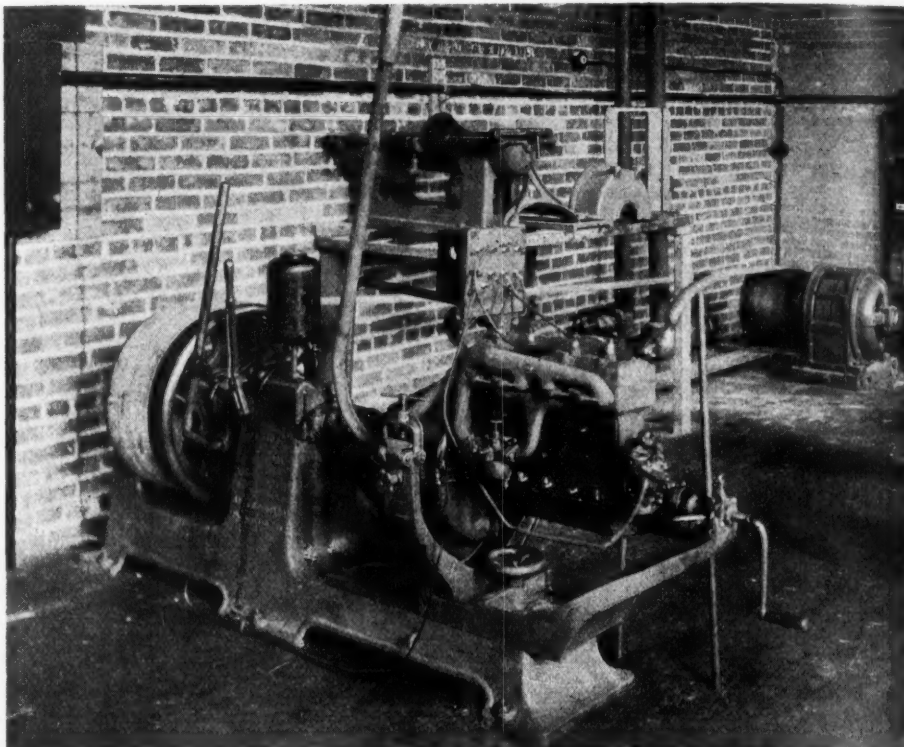
SERVICE and maintenance on the Ford power plant essentially may be divided into five general subjects, as follows:

- 1—Removing the engine from the car.
- 2—Cylinders, pistons, piston pins, rings.
- 3—Crankshaft, connecting rods, main and connecting rod bearings.
- 4—Camshaft, valves, timing gears.
- 5—Overhauling the transmission.

The above items include only the things on which actual operations, such as reaming, boring, filing and fitting has to be done and do not cover adjustments pertaining to the carbureter, ignition system, magneto, etc. It obviously is impossible to cover the entire subject of servicing the Ford power plant in a limited space, and therefore, only the units on which actual machine work has to be performed will be taken up.

The procedure in removing the Ford power plant from the car is as follows:

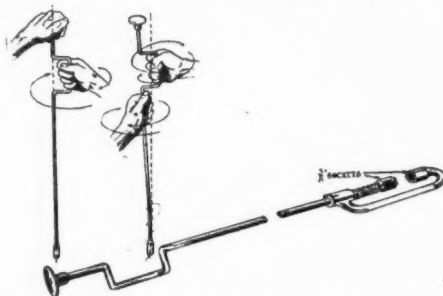
- 1—Take off hood and drain radiator.
- 2—Loosen bolts in top hose connection and also in side hose connection to cylinder block.
- 3—Loosen radiator-to-dash stay rod.
- 4—Remove nuts and washers from radiator hold-down bolts and take off radiator.
- 5—Take out spark plugs, remove magneto wires and loosen cap screw holding the commutator and lay latter aside.
- 6—Take off cylinder head.
- 7—Remove four bolts holding the universal ball cover.
- 8—Turn off fuel supply and disconnect feed line at carbureter.
- 9—Remove inlet manifold with carbureter attached.
- 10—Remove exhaust manifold with exhaust pipe attached.
- 11—Remove bolts holding the pans to each side and drop pans.
- 12—Loosen the nuts holding the steering arm on the lower end of the steering gear and remove the three bolts holding the column to the frame.
- 13—Loosen dashboard and pull dash and steering column up out of way. (Not necessary on 1917 and later cars.)
- 14—Remove nuts from radius rod ball joint on crankcase.
- 15—Loosen and remove bolts holding engine to front cross member of frame.



A machine for burning-in and running-in the bearings of a Ford. The operation of burning-in the bearings consists of drawing up the main bearing caps very tight and running the shaft in the bearings without any oil or lubricant. A few minutes melting the babbitt next to the shaft and the babbitt forms itself into a perfect fit around the shaft. Main bearings and connecting rod bearings are usually burnt-in separate. After the engine is completely assembled it can be run under its own power in the machine

- 16—Loosen and remove bolts which hold the side crankcase arms to frame.
- 17—Engine may now be removed from car with crane or hoist.

After the engine has been removed from the car it should be placed in a suitable engine stand previous to taking it



A speed wrench used for removing the crankcase bolts. The spring holds the lower socket up against the head of the bolt and the nut can be very quickly removed. There is a great variety of wrenches on the market designed to speed up the servicing of the Ford powerplant

down. There are any number of excellent stands on the market for this purpose and these are far superior as a rule to any home-made stand.

Assuming the cylinder head has not been removed nor the oil drained from the engine the procedure in taking down the engine is as follows:

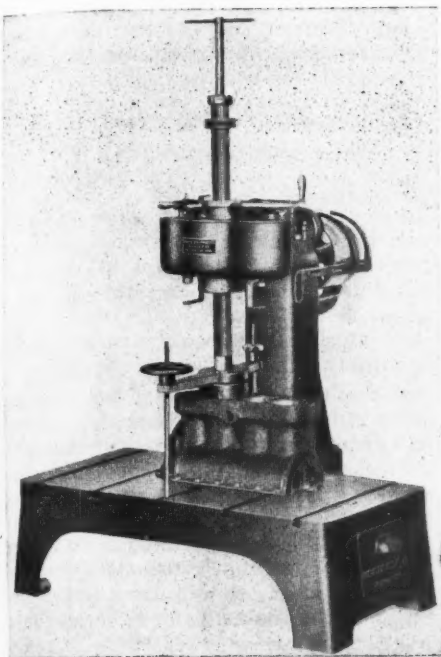
- 1—Drain the oil into a pail by taking out the drain plug. The gasket should be renewed as it is hard to get an old one tight, so this one can be junked. Put the plug back in the hole after the oil is all out and screw it in far enough so that it will not be loose.

- 2—Take all the cotter pins out of the crankcase bolts and transmission case bolts. They are to be junked.

- 3—Remove the fan shaft bracket by taking out the cotter pin at the back end of the bolt, taking off the locknut and screwing out the long bolt.

- 4—Take off the fan belt.

- 5—Remove the timer from the camshaft.



The power cylinder reboring machine which is featured by a pilot which directs the cutter head entirely through the bore. This pilot does not turn at the base, hence there is no wear at this point. The boring is done from top to bottom, assuring little wear where the pilot runs through the spindle, since the borings are dropped downward and away from the bearings. A quick clamping feature makes it possible to put the block in place in a very short time

6—Remove the timing gear case by taking out the cap screws.

7—Loosen the reverse, low speed and brake adjustments on the transmission.

8—Hold the boltheads underneath the transmission case with a $\frac{3}{8}$ in. open end wrench or a knee wrench and turn the nuts off with a $\frac{3}{8}$ in. speed wrench. A socket wrench for this is shown herewith.

9—Remove the transmission cover, the pedals coming off with it.

10—Loosen the cylinder-head bolts with a 7-16 in. end wrench.

11—Turn the bolts out with a 7-16 in. speed wrench.

12—Lift off the cylinder-head. If it sticks, it can be started loose by cautiously slipping the point of a screwdriver between the head and the block and turning or prying until the joint loosens. It is then lifted off by catching a finger of each hand in the spark plug holes of cylinders 1 and 4.

13—Hang the copper-asbestos cylinder head gaskets on a nail if it is in fair shape to be used again, otherwise put it in the junk box.

14—Remove the nuts from the valve cover studs with a $\frac{3}{8}$ in. speed wrench.

15—Remove the valve covers.

16—Put the nuts back on the studs to prevent their getting lost.

17—Mark the valve heads with a center punch, starting with the front No. 1 to the back No. 8.

18—Raise the valve springs one at

a time with the valve lifter and pull out the pins. The pins can best be taken out with a light pair of pliers with long noses. This is quicker and easier than using the fingers.

19—Lift out the valves by the heads.

20—Pull out the springs and cup washers.

21—Turn the engine upside down and set it on a stand.

22—Hold the crankcase nuts with a $\frac{3}{8}$ in. open-end wrench or knee wrench.

23—Turn out the bolts with a $\frac{3}{8}$ in. speed wrench.

24—Remove the crankcase.

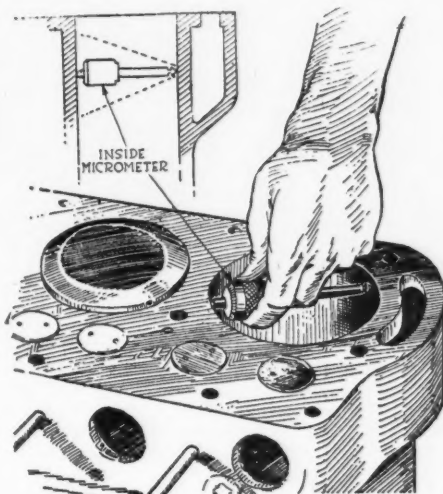
25—Remove the three brake bands by slipping them back off the drums.

26—Take out the wire that locks the flywheel screws.

27—Remove the flywheel with a flywheel wrench.

28—The transmission will now come off and it is to be laid aside until it is ready to be disassembled further.

29—Remove the four bolts that hold the field coil assembly to the block.



Another type of inside micrometer for measuring cylinder bores. The usual procedure when measuring cylinders for reboring is to test them at several different places

30—Lift off the coil assembly.

31—Remove the oil pipe.

32—The engine block now containing the crankshaft, connecting rods, pistons and camshaft, is washed with kerosene to remove all the oil and dirt.

33—Place the block in a stand.

34—Turn the block in the stand so that the cylinders are horizontal, then latch the stand in this position.

35—Remove the $\frac{3}{8}$ in. cap screws that keep the camshaft bearings from turning.

36—Remove the timer roller lock-nut and roller.

37—Pull the camshaft out through the front of the engine in one unit with the gear-wheel.

38—Mark the pistons on top with a center punch, 1, 2, 3 and 4.

39—Mark the main-bearing caps in

the same way at the front ends, 1, 2 and 3.

40—Mark the connecting-rod bearing caps on the camshaft side, 1, 2, 3 and 4.

41—Remove the cotters from the connecting-rod bolts.

42—Remove the connecting rod bolts, starting them with an L-wrench and turning them out with a speeder.

43—Reassemble the caps to the rods with the bolts.

44—Push the pistons out through the top of the cylinder block.

45—Lay the pistons on the bench on their heads.

46—Remove the cotter pins from the main-bearing bolts.

47—Hold the heads of the main-bearing bolts from turning while the nuts are taken off. These front and center bolt heads are square, and the rear heads are round with one side milled off. The nuts are hexagon. Use speeders on the lower ends.

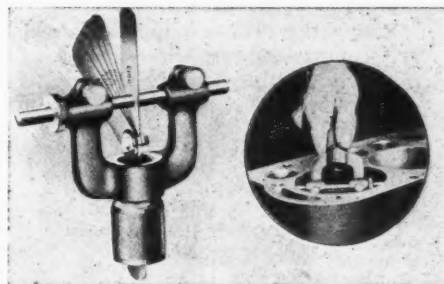
48—Lift out the crankshaft.

Cylinders, Pistons, Piston Pins, Rings

The cylinders of the Ford engine may be reconditioned by grinding, reaming or reboring. There are on the market many types of cylinder refinishing tools for Fords, some of which are applicable only to the very large shops doing a big volume of work.

One of the quickest ways is to rebores the cylinders with a boring mill. One of these machines is shown in connection with this article. Inasmuch as there are a number of these machines no specific instructions can be given here, but the following remarks regarding refinishing of the cylinders is applicable to all:

The first thing to do is to measure the cylinders to see how much they will have to be rebored. This is done by "miking" the bores with an inside micrometer, two types of which are illustrated. The micrometer is used at various points in each cylinder. After this the cylinders



Before fitting new pistons and rings the cylinders must be measured, and inside micrometers are used for this and one is style shown above. It consists of one fixed pin and one adjustable pin mounted in a holder. The combined length of both these when together equals the exact standard size of the cylinder to be measured. In case of the Ford this is $3\frac{3}{4}$ in. To measure the oversize unscrew the adjustable pin until the gage fits snugly into the cylinder. The opening between the pins when measured with a thickness gage shows the oversize

are rebored to the next largest standard oversize. The standard oversizes for Ford pistons are:

No. 3021 (piston) $3\frac{3}{4}$ in diameter standard).

No. 3021-C (piston) .0025 in oversize.

No. 3021-D (piston) .03125 in. oversize.

No. 3021-E (piston) .033 in. oversize.

A block which has been rebored to the last oversize must be junked, as there is danger from running into a sand hole, and furthermore it would necessitate special pistons.

Whether or not the cylinders have been refinished by grinding, reboring, or reaming, it probably is a good plan to polish the surfaces by the process known as "honing." This puts a mirror-like finish on the surfaces of the bores and in cases where the cylinders are not too much out of round or badly scored, the honing process used alone will restore the bores to sufficient roundness for new oversize pistons.

Whatever the oversize of the pistons fitted to the rebored cylinders the pistons should fit quite closely. No more than .004 in. or less than .003 in. clearance should exist between the cylinder walls and skirts of the pistons. It may be necessary to file the pistons slightly at various points or to tap out a slight distortion with a rawhide mallet in order to make the piston slide freely in the cylinder.

If the old pistons are used it may be necessary to renew the bushings in them for the piston pins and even the latter may need renewal. The play in these parts may easily be detected with a micrometer or feeler gage.

To remove the piston pin bushers the piston should be held in a piston vise if the pin is to be hammered out with a drift or bushing driver. It is better, however, to do this work in a press. The new bushings also can be inserted in the press, after which they are reamed to correct size with a piston pin bushing reamer.

In fitting new piston rings the latter should first be gaged and classified as follows:

Rings with .003 in. gap when rings are compressed are to be used in top ring land of piston.

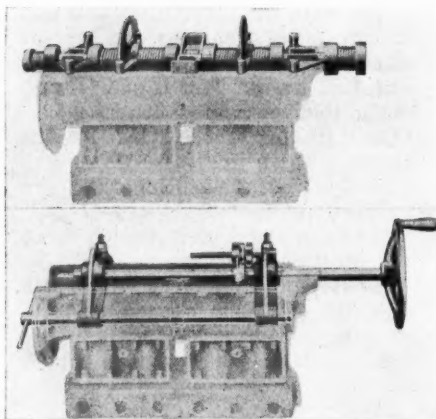
Rings with .005 in. gap in second ring land.

Rings with .008 in. gap in bottom ring land.

Ford piston rings are tapered around their circumference, that is, they are smaller on top. This is done to prevent oil pumping. To tell the smaller diameter look on the inside of the ring, the small diameter will be marked either with a machined groove, a punch mark or the name "Ford." In putting the new pistons on the rings be sure that these marks are towards the top of the pistons.

The ends of the rings should be filed if necessary and a handy jig for measuring the rings is shown in connection with this article.

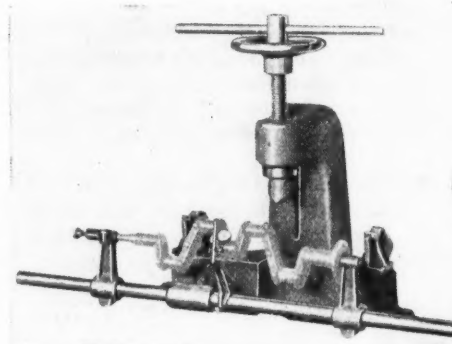
If there are any high spots on the rings so that the latter bind slightly in



A babbit pouring fixture in position ready to pour the bearings in the Ford block. The other view shows the boring fixture in position and how the bar is located from the camshaft hole, assuring alignment



In fitting the main bearing caps to the shaft there should be just sufficient play so the caps will rock slightly. That is, the bearing must be a little too tight to set down by hand against the liners. The proper rock is between .004 and .006 in. and can be tested as shown with a feeler gage



For crankshaft work it is essential to have some form of straightening press. The one shown above will straighten crankshafts, camshafts, etc. It is also possible in some places to use V-blocks, so that shafts that do not have center holes in the ends can be tested for straightness. A dial indicator shows the exact condition of the bearings

their grooves, the excess metal can be taken off by rubbing the ring on a sheet of emery cloth laid upon a surface plate or other perfectly flat surface.

Crankshaft, Connecting Rods, Main and Connecting Rod Bearings

Before doing any bearing work it is necessary to test the crankshaft as to its straightness and roundness of journals. Crankshafts may be straightened in a lathe, but there are on the market straightening presses which do this work admirably. One of these is shown.

There are two ways of holding the shaft while testing it. It may be mounted on centers as in a lathe or upon V-blocks. In the latter case the journals are first tested with a micrometer to see if they are round, as obviously there would be a false reading of the dial indicator if the shaft journals are oval.

Usually a variation of about .002 in. of the needle in the indicator is permissible. Above that the shaft needs to be straightened and this is accomplished by exerting pressure upon the high side of the shaft. The shaft must be bent slightly beyond the point desired as it will naturally spring back slightly when the pressure on the hand wheel is released.

It is not economical to try to recondition a Ford crankshaft that is considerably worn, because the price of a new shaft is less than the cost of regrinding the old one.

About all there is to do to the connecting rods, assuming that new ones are installed, is to test them for alignment. The tests must show that the piston pin end of the rod is parallel with the big end, otherwise the piston may cock in the cylinder, or in the case of a twisted rod oscillate as it goes up and down in the cylinder.

If the main bearings are worn considerably so that good adjustment cannot be had, the babbit in the block must be renewed. This should only be attempted with one of the babbiting jigs which the market affords. These jigs as a rule locate from the camshaft bearing holes and therefore there is pretty good assurance that the main bearings will be poured so they are parallel with the camshaft bearings, as any misalignment of the crankshaft and camshaft center will effect the meshing of the timing gears.

After the bearings have been poured, it is a good plan to align ream them. The edges of the babbit are filleted to correspond to the fillets of the crankshaft bearings. In the rear bearing the babbit extends over both ends, because this bearing takes care of the end thrust in the crankshaft.

The longitudinal edges of the babbit in the block bearings are filed or scraped to an angle of 45 degrees. The same is true of the babbit in the caps. This allows the oil to be distributed over the bearing and also acts as a clearance for the babbit squeezed out during the running-in of the bearings. The end play in the crankshaft should not be over .004 in.

Inasmuch as the cylinders have now been reconditioned, new pistons and rings fitted, crankshaft straightened, etc., the bearings are ready for the "burning-in" process. There are machines on the market for this and the process is pretty well known. Essentially it consists of setting the caps up tightly and running the engine for a very short time on the machine. The heat set up in the bearings melts the outer skin of babbitt and this in turn forms itself around the crankshaft. A lot of power is needed for the first half minute of burning-in and an electric motor of 10 h.p. is necessary. It is necessary to feel the caps of the bearings and if they do not get smoking hot in 30 seconds or so, the caps have not been drawn tightly enough. If any cool caps are detected they must be taken down by filing or rubbing them on emery cloth. The "rock" of the caps should be between .004 and .006 in. It takes about 2 min. to do a job of burning-in the bearings, but this will vary with the tightness of the caps, the speed of the machine and the nature of the babbitt.

After the main bearings are burned in oil is applied freely to them while the connecting rods are burning-in. The pistons are placed in their respective cylinders and plenty of oil is applied to all parts excepting the connecting rods. Then the same procedure of burning-in is carried out with the rod bearings. Be sure to detect a cool rod, as it indicates that the cap has been applied too loosely.

Camshaft, Valves and Timing Gears

The camshaft must be tested for straightness the same as was the crankshaft. If the camshaft bearings are worn they must be replaced. Two of them are split and the other is a one-piece bronze bushing. In meshing the timing gears see that the punch marks on the gears coincide.

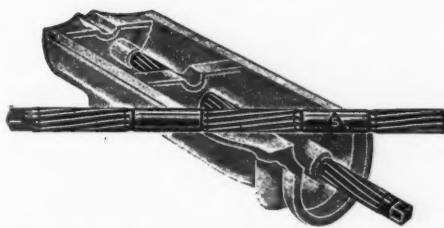
If the valve seats and valve stem guides are worn considerably they can be reconditioned by boring out the port, cutting a new seat and reaming out the guides to take valves with an oversized stem. There are any number of combination tools on the market to do all these operations and the chief thing to watch is that there be good alignment of the valve seat valve stem guide and push rod guides. A special tool for reaming the push rod guides is shown herewith.

After a new seat has been cut for the valves the latter are ground in in the usual manner, carrying out the operation only enough to insure a tight seat.

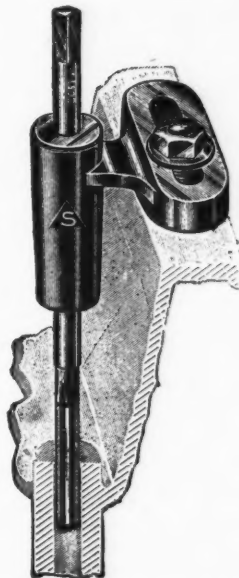
Overhauling the Transmission

Worn bushings in the transmission allow the drum to run irregular, set up noise and in general affect the proper operation of this unit. In order to rebush the drums the transmission must be completely taken down.

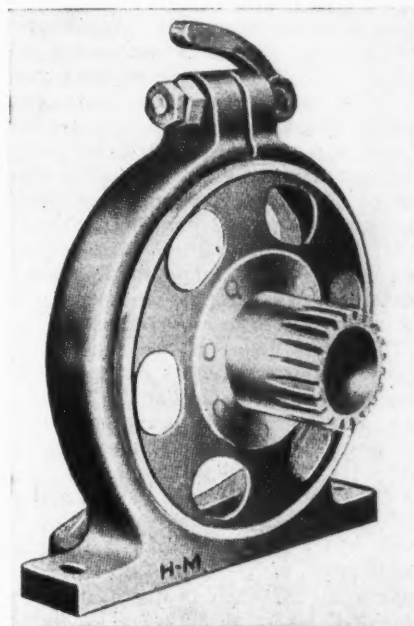
1—The first thing to do is to test for looseness in the front universal



A noisy operation of an engine is often due to worn camshaft bearings. Like the crankshaft bearings the camshaft bearings must be in alignment. The reamer shown above aligns reams all three newly fitted bearings in one operation with precision and speed



Worn push rod guides can be restored to correct alignment by reaming for 1/64 in. oversize rods. A jig is necessary for this in order to obtain accuracy. The jig shown above clamps to the cylinder base in order to secure the correct alignment



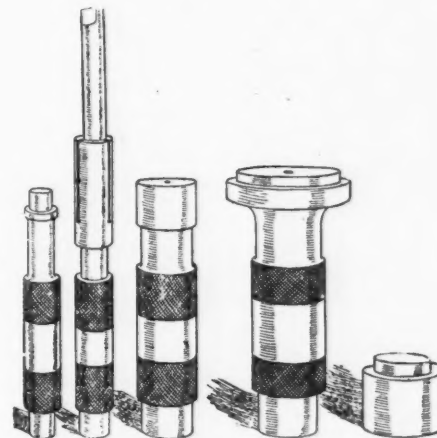
A transmission drum clamp which holds the transmission drums while reaming bushings with hand reamers. It is equipped with a quick locking device and ordinarily is bolted to the work bench by three bolts



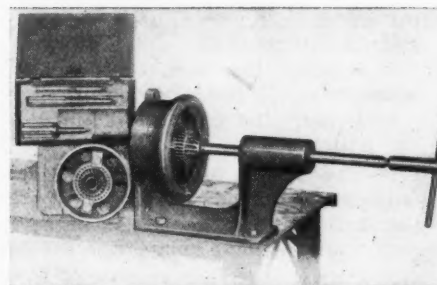
In order to get proper bearing adjustment there must be perfect alignment of the bearings. Here is shown an aligning reamer for Ford crankshaft bearings, which do a job of reaming all three bearings in one operation. An allowance of .0015 is made for wear in the crankshaft. This reamer can also be used for reaming and fitting connecting rod bushings



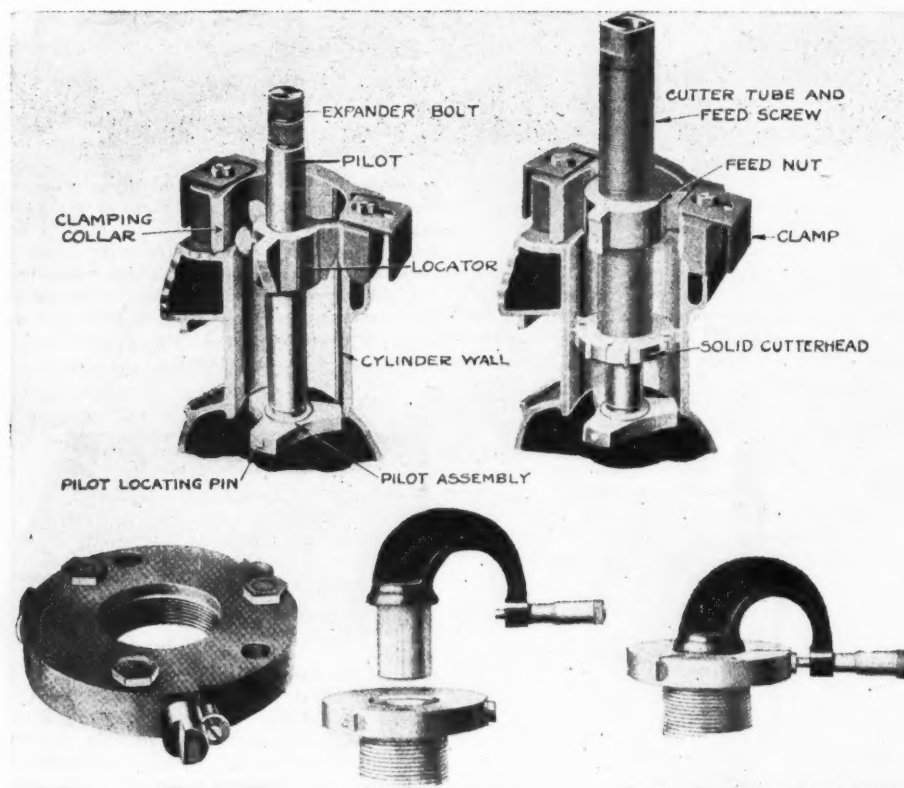
One of the essential pieces of equipment to have on hand is a surface plate. This is useful for testing bearing caps and other parts which have to be filed to a flat surface. A plate 12x60 in. is a handy size for all around work



Arbor press tools used in connection with work on the Ford transmission. The set consists of a triple gear bushing reamer, brake drum bushing driver, slow speed bushing driver, reverse drum bushing driver and a driven gear puller block



Above is shown a transmission reaming machine so constructed that alignment of the drum with the reamer is assured. The drum is accurately brought to the center by a tapered compression ring which draws in uniformly from all sides. The triple gears are secured from the centering device by the use of a special fixture which centers in the same manner as the transmission drum



Details of a portable reboring machine which is universal on open head blocks. This particular machine comes equipped with an adjustable cutter head which permits it to bore $3\frac{5}{8}$ to $4\frac{1}{2}$ in. One of the principal features is that the pilot centers at both the top and bottom of the cylinder bore, thus providing a guide for the cutter head, the entire depth of the cylinder. The reboring tool may be operated by hand or under a drill press. A 20-in. drill press is sufficient and best results are obtained at operating it at a speed of 40 r.p.m. The cutter head supplied with the machine rebores the cylinder to receive the standard .031 oversize piston. At the lower left-hand corner is shown the adjustable cutter head in which each blade is set separately. At the lower right is shown the manner of operation of a sizeometer furnished with the tool and which accurately sets each blade

ball cap. The cap should be fitted up to the rear end of the driving plate shaft and if there is any looseness a ball cap with new bearing should be installed when the transmission is assembled.

2—It is not always necessary to entirely disassemble the parts from the transmission driving plate assembly and the spring, pin, etc., can be left as they are.

3—Remove the locking wire from the screws that hold the transmission driving plate to the brake drum and remove the screws.

4—Tip over the unit which allows the clutch push ring to drop out and also the clutch disks.

5—Remove the lock and screw which keys the inside clutch drum.

6—Remove the drum and key with the puller.

7—The drums together with the triple gears can now be slipped over the shaft, starting the shaft if necessary with a babbitt hammer.

8—Pull the driving gear with its key, which releases the two drums from the brake drum.

9—If necessary to disassemble the springs the unit may be in a vise compressing the cup and then driving out the pin. This will release the clutch shift, the spring, the spring support, and the thrust ring.

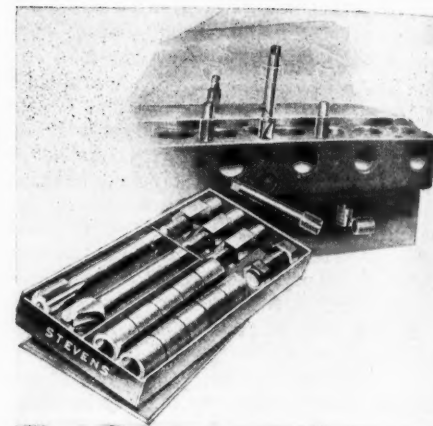
10—Clean the clutch disks in kerosene and if they are cut or scored they should be discarded for new ones.

In order to do a good job on the bushings it is essential to have some sort of a press or other apparatus. Apparatus of this kind is shown in connection with this article. The arbor press tools shown herewith also are essential. The proper drivers should be used on the respective drums in as much as each is the correct size and has the right kind of a shoulder, so that the new bushings will not be damaged in forcing them in.

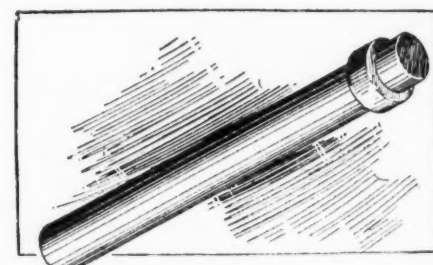
All three of the drums are rebushed and care must be taken to see that the bushings are a snug fit, otherwise it will be impossible to secure a good job.

The triple gears are rebushed in the same manner but before doing this they must be tested to see that the rivets are tight and that there is no motion between the gears. If it is necessary to re-rivet the gears the heads of the old rivets can be cut with a cold chisel. There are special riveting jigs on the market for this work which give very good satisfaction. Three gears must be lined up so that the teeth of all three are in line at one place. This will occur at only three points of the circumference of each set of gears. The new rivets are now put in and headed up on a jig.

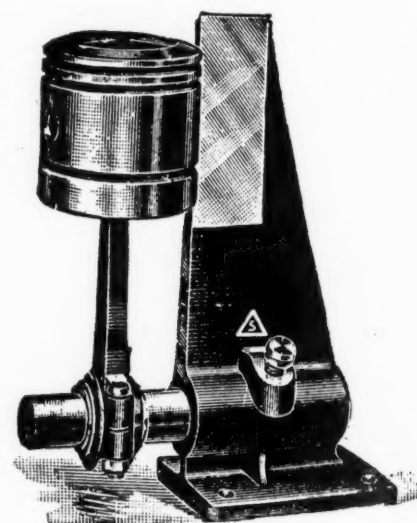
After the bushings have been pressed into the drums and gears they must be



A bushing set used for replacing stripped threads in Ford cylinder blocks. The bushing takes a cylinder bolt of standard size. Tap and reamer are held in exact position by their long shanks which extend through the cylinder head, the latter serving as a jig



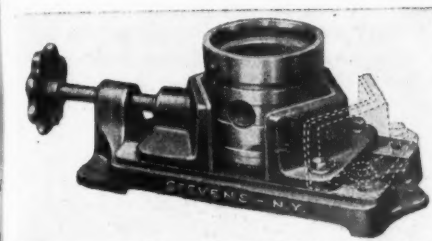
In the absence of a piston pin bushing press the bushings may be removed by driving them out with a solid piece of steel shaped as shown above. Preferably this tool is made in one piece turned in the lathe so that its shaft is a little less in diameter than the diameter of the pin and the diameter of the collar a trifle less than the outside diameter of the bushing



Before assembling the engine the pistons and rods must be lined up. Here is shown a piston aligner which detects twists or bends in the connecting rods against two mechanical surfaces



Much time can be saved by using special equipment in servicing a Ford powerplant. One of the handiest tools along this line is the ring gage which makes it unnecessary to bring the cylinder block to the work bench to fit new rings. The procedure is to fit one ring to the engine and then place this ring in the gage, where the opening of the ring is measured with a thickness gage. This measurement is duplicated in all the rings



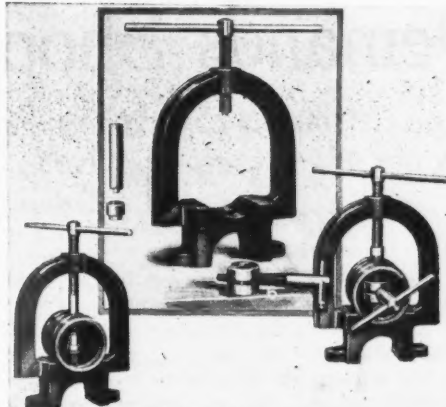
The correct manner of holding a piston while working on a piston pin or on the piston itself is to clamp it in a vise intended especially for that purpose. The ordinary shop vise exerts too heavy a pressure on the thin shell of the piston

reamed out to the correct size. There are special reamers on the market for this and for best results the drums should be held in a jig to insure an accurate job. The reamers should be run all the way through each bushing and must be held steady otherwise an uneven hold will be the result.

Assembling the Transmission

1—A group consisting of three drums, the driven gears and the triple gears, is the first thing to be assembled.

2—Put the brake drum, the one



The proper way to remove piston pin bushings and insert new ones is by means of a press. Such a press is shown above. To remove a bushing the plunger (2) drops into the lower bushing from inside of the piston. The punch (1) slips through the upper bushing against the plunger. Pressure on the screw (3) presses out the bushing

with the longest shaft, on a bench with the shaft or hub uppermost.

3—Put the slow speed drum over this with the gear on top.

4—Put the reverse drum over the slow speed drum so that the reverse gear surrounds the slow speed gear.

5—Put the driven gear in place with the teeth downward so they come next to the slow speed gear, the two keys having been previously put in the slots in the brake drum hub. An abor press can be used to force the gear into place.

6—The gear should be driven on just far enough so that there is no lost motion and yet so that the drums do not bind.

7—Mesh the triple gears with the drive gear so that the punch marks go inside, the smallest of the three gears comprising the triple gear assembly, being at the bottom.

8—Space the three triple gears around the driven gear so that there is an equal distance between them. A string may be tied around the outside of the gears to hold them in this position.

9—If the triple gear studs on the flywheel are worn they should be replaced.

10—Put the flywheel, face down, on the bench.

11—Turn over the assembly of drums and triple gears and slide them on the transmission shaft.

12—The studs should enter the holes through the triple gear bushings and it may be necessary to shift the assembly around slightly until they do so.

13—Fit the clutch drum key in the transmission shaft.

14—Press the clutch disk carrier in place on the shaft.

15—Lock in position with the set screw.

16—Put the distance plate on over the clutch drum.

17—Replace the clutch disks, starting with the small one and then alternating large and small. A large disk must come last as a small one would be liable to slip over the drum when the clutch drum is released.

18—Put the clutch push ring on over the clutch drum and on top of the disk the three pins should project upwards.

19—Bolt the driving plate in position, the three pins of the push ring coming through to make contact with the adjusting screws on the clutch fingers.

20—If the transmission is properly assembled up to this point the flywheel will revolve freely while any one of the drums is held stationary.

21—Slip the clutch shift over the hub so that the small end rests on the ends of the clutch fingers.

22—Put the clutch spring in place, the clutch supports being inside so that the flange will rest on the upper coil of the spring.

23—Place the clutch ring in place with the notch end down.

24—Compress the spring so that the pin can be put through the hole in the side of the spring support and then through the shaft. To compress the spring the adjusting screws of the clutch fingers should be loosened all the way.

25—The only adjustment is that on the clutch and this is done by setting up the three screws so that each one has the same number of turns. If they are turned in until the clutch spring is compressed to a length of 2 1-16 of in. the clutch should have sufficient hold to drive the car.

N. A. C. C. Place March Car and Truck Production at 356,509

Output Not Up to February but It Exceeded Same Month of Last Year

NEW YORK, April 6.—Shipping figures compiled by the National Automobile Chamber of Commerce place March production of cars and trucks at 356,509, as compared with 367,435 in February. While this is a 3 per cent under the second month of the year, it exceeds March

of last year by a fraction under half of 1 per cent—0.417 to be exact.

While there is only 3 per cent difference between production in February and March of this year, yet it must be remembered that March had 26 working days as compared with 23 in February. Figuring on the daily production averages of the two months, the slowing up of the industry in the last half of March can be seen. In February this daily average was 15,932, a record for the industry, while in March this average dropped to 13,712 daily. This is a falling off of 13.9 per cent.

March, however, is not a disappoint-

ing month to the manufacturers, who feel that the weather has been largely to blame for present conditions. They believe that with the coming of real spring that stocks on hand will rapidly dissipate and that the expected big business will materialize. The curtailing of production was a cautionary step.

With the report in for March, it is now possible to compare the first quarter of this year with the corresponding period in 1923. The count shows that for the first quarter this year the industry was traveling at a pace which if maintained will result in the smashing of the production record made in 1923.

Flat Rate Demands Shop Equipment

Shop Equipment Is to the Economics of Maintenance What Production Facilities Are to the Manufacturing End of the Industry

By PAUL DUMAS

IT has often been said in the installments of this series that Flat Rate must be taken internally and not rubbed on as a liniment. In other words, as a logical system of selling the merchandise of the maintenance dealer, Flat Rate has necessitated certain internal revisions in his tactics. These revisions begin with a change in the viewpoint and mental attitude, and amount to what can be described under the blanket term "better business tactics." Primarily these better business methods are made up of the two elements BUSINESS ADMINISTRATION AND REPAIR SHOP FACILITIES.

Repair Shop Facilities

Past installments have covered the various phases of business administration, including determination of costs, paper work and mechanic compensation plans, so that in this, the final installment, it is believed that the reader is in a frame of mind to hear a few words regarding the other element, Repair Shop Facilities. This belief is based on the fact that what has been said before was generally in content an explanation of the Flat Rate system of selling automotive maintenance.

Repair shop facilities are to the economics of maintenance what production facilities are to the manufacturing end of the industry. Sad to say, this simple truth has not in the past been generally recognized, and being thus overlooked, maintenance has not until recently been within hailing distance of the trend in production facilities.

As car production methods improve and the selling price of new vehicles is lowered, there should be a corresponding movement in that part of the industry devoted to the maintenance of those same vehicles. Maintenance as a scientific business enterprise has been trailing so long that the cost of rebuilding a 1919 car is out of proportion to the selling price of a new one of the same make and size.

Our repair facilities, for some reason, have been lacking in efficiency as compared to manufacturing facilities. Has this lack of efficiency been due to a lack of available equipment or to the lack of application of the machinery available? We are inclined to the belief that the high comparative cost of maintenance is due, in a large measure, to the lack of application of the equipment available.

Then years ago the garage press was considered a luxury, but today it has become as common as the garage jack, which today is considered as necessary as a bench vise. We are progressing, but in the past the progress made in the utilization of shop equipment was so slow that it became practically unnoticeable. The dealer figured at that time that the purchase of shop equipment was unnecessary, and foolish to an extent, because at that time there did not exist any simple method of taking financial advantage of the time savings made possible by such a purchase. Conditions in the maintenance business have since undergone considerable change, and the dealer and independent maintenance shops are witnessing a owner attitude that will, by its demands, force a closer and more serious consideration of the subject of shop equipment.

Changed Conditions

The whole proposition resolves itself into primary business principles. If John Henly's shop can reline a set of Runwell brakes in six hours, and if it taxes the Runwell service station eight hours for the same job, the chances are

THE theory behind Flat Rate covers so many phases of the maintenance business that a thorough knowledge of it requires some thought and study. The full doctrines of the Flat Rate idea cannot be acquired over night, and for this reason the several preceding installments of this series were arranged and written in MOTOR AGE. If the reader will refer back to what has been covered in the series, he will note that the contents are an attempt to portray the development of the original Flat Rate idea into the tangible conditions it has created. For the sake of those who have not followed each installment, the following is a brief outline of individual preceding installments of the series:

June 21, 1923, **ELEMENTS OF FLAT RATE MERCHANDISING**—In this, the first of a series, the fundamentals and definitions of the system are discussed. The several items that constitute "Fixed Costs" are listed and a new arrangement for printing Flat Rate Schedules is introduced.

July 12, 1923, **HOW FLAT RATE MAKES FOR THE DEALER'S PROFIT**—This installment covers the mistakes often made by dealers who lack a thorough knowledge of business methods. How to remove the speculation from Maintenance.

August 2, 1923, **FLAT RATE BUSINESS STANDARDS WILL MAKE MAINTENANCE PAY**—The first step towards a profitable era for Maintenance must begin with the readjustment of the manufacturers' attitude. The car sales department must discard the idea that automobile repairing is a "necessary evil." A higher hourly standard will reduce the owner's upkeep costs and allow maintenance to stand on its own feet.

August 23, 1923, **STANDARDIZED PROCEDURE A NECESSARY FLAT RATE INGREDIENT**—The maintenance establishment can learn something about big volume production from the factory. The repair shop manual as the first stage of development of standardized procedure for the maintenance dealer. Standardized procedure and its effect on the labor market.

September 12, 1923, **CAN THE SMALL DEALER AFFORD TO PASS UP FLAT RATE?**—There must be something wrong with the hourly system if the revenue from labor of two mechanics is not sufficient to pay a fair salary to the proprietor.

October 4, 1923, **FLAT RATE REQUIRES LESS PAPER WORK**—Only three forms are necessary for the installation of the Flat Rate System. It requires less bookkeeping and makes possible the cash payment plan on repair sales.

October 25, 1923, **FLAT RATE IS MORE THAN FAIR FOR THE MECHANIC**—A workman's efficiency varies directly according to the amount of incentive supplied by the employer. By establishing a Flat Rate within a Flat Rate the mechanic can look forward to better pay. Two compensation plans that raise pay and self respect for the workman and earnings for the dealer.

November 22, 1923, **EVERYONE BENEFITS UNDER FLAT RATE MECHANICS' COMPENSATION**—When mechanics compensation plans come into wider use there will be more good jobs paying good money, rather than a great number of jobs paying the mechanic only enough to break even.

December 13, 1923, **APPLYING THE FLAT RATE SCHEDULES**—The wording of a Flat Rate operation determines the exact amount of work it is intended to cover. A knowledge of the meaning of Flat Rate words and terms is essential for the intelligent selling of Flat Rate Repairs. How to use the schedules.

January 3, 1924, **MAINTENANCE MUST BE MERCHANDISED**—Maintenance merchandising is entitled to Scientific Research Data. As a step towards closer estimating facilities, reputable re-pair establishments should be supplied with authentic repair parts price lists.

February 21, 1924, **WHAT IT COSTS TO RUN THE SHOP**—Items which must be understood and met by the man starting in the automotive maintenance business before he can make a profit. How Flat Rate helps.

March 20, 1924, **DEMANDS GREATER MAINTENANCE EFFICIENCY**—Fixed price and Post Graduate courses suggested as methods of increasing output and profits in the shop.

that most of the Runwell owners will bring their brake work to the Henly establishment. Henly's mechanics aren't any faster with their hands than the Runwell men, but Henly has equipment for the job that allows him to meet the Runwell Flat Rate schedule, that gives him a wide margin to permit absorbing the cost of the equipment and room for a good profit besides. John Henly is in a position to meet competition, he can reduce prices should good business policy demand such a reduction, but whether he does or does not, he still has that two-hour advantage over the Runwell garage and the added advantage of being able to give **QUICKER SERVICE**. The savings in time and the increase in profits made possible by such devices as a brake lining machine hold true for the various other items of shop equipment. Under average conditions, as encountered in the average shop, the operation of installing and fitting a set of main and rod bearings becomes a job that requires anywhere from 30 to 80 hours with hand methods. The removal of the engine from the frame, its disassembly, reassembly and installation are accomplished in much less time than required to do the actual fitting of the bearings, and why? In the first place, there is perhaps no other engine operation that is as tiresome or that takes as many hours to accomplish as the job of hand scraping. In the second place, the skill required for this work, if it is to be satisfactory, makes it a job to be trusted only to the most expert of mechanics. If those same bearings were fitted at the factory with a power driven fly cutter or by use of the line reamer, why can't we develop and use fly cutter machines and line reamer outfits that will be universal in range?

The list of the items of shop equipment that should be found in every shop will always include devices to lessen the time required on the jobs that are often executed, such as cleaning carbon and grinding valves, and the tireless wrist and the old putty knife are bound for oblivion. If any dealer has the business sense to operate on the Flat Rate plan he will know without being told that

Flat Rate Labor Charges for Automobile Repairs

EFFECTIVE MARCH 1, 1924

| Call for Car, 50c. Deliver Car, 50c. Battery Service, 25c. Recharge Battery, \$1.25. Flush Crank Case, 50c. Change Motor Oil, No Charge. | BUICK 4 | BUICK 6 | CADILLAC | CHANDLER | CLEVELAND | DODGE | HUDSON | NASH 4 | NASH 6 | OAKLAND | OLDS 4 | OLDS 6-37A | OLDS 8 | PACKARD 6 | PAIGE 6-44 | Light | Special | Big |
|--|---------|---------|----------|----------|-----------|-------|--------|--------|--------|---------|--------|------------|--------|-----------|------------|-------|---------|-------|
| 1. Grind Valves, Clean Carbon, Tune Motor | 10.00 | 12.50 | 19.00 | 13.00 | 12.00 | 10.00 | 13.00 | 10.00 | 12.50 | 12.00 | 10.00 | 12.00 | 17.50 | 14.00 | 12.50 | 12.00 | 13.00 | 13.00 |
| 2. Take up all Con. Rod Bearings | 9.00 | 10.00 | 13.00 | 10.00 | 10.00 | 10.00 | 10.00 | 8.00 | 12.00 | 10.00 | 10.00 | 12.00 | 13.00 | 16.00 | 12.00 | 10.00 | 11.00 | 11.00 |
| 3. Take up Con. Rod Bearings and Fit New Rings | 14.00 | 16.00 | 18.00 | 16.00 | 15.00 | 16.00 | 22.00 | 14.00 | 18.00 | 16.00 | 16.00 | 17.00 | 18.00 | 26.00 | 17.00 | 16.00 | 17.00 | 17.00 |
| 4. Fit New Wrist Pins in Connection with Job 3, additional charge | 5.00 | 6.00 | 8.00 | 6.00 | 6.00 | 4.00 | 6.00 | 5.00 | 6.00 | 6.00 | 4.00 | 6.00 | 8.00 | 7.00 | 6.00 | 6.00 | 6.00 | 6.00 |
| 5. Take up Main Bearings in connection with Jobs 2, 3 and 4, additional charge | 5.00 | 6.00 | 8.00 | 6.00 | 10.00 | 5.00 | 12.00 | 12.00 | 14.00 | 8.00 | 12.00 | 10.00 | 18.00 | 20.00 | 7.00 | 6.00 | 7.00 | 7.00 |
| 6. OVERHAUL MOTOR—includes grind valves, take up all bearings, grind cylinders, fit new pistons, rings, pins. Also includes new parts as follows: pistons, rings, pins | 87. | 170. | 150. | 115. | 108. | 114. | 117. | 117. | 144. | 132. | 107. | 123. | 172. | 147. | 120. | 130. | 110. | 130. |
| 7. Overhaul Generator | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 | 8.00 |
| 8. Overhaul Starting Motor | 10.00 | 10.00 | 12.00 | 6.00 | 6.00 | 9.00 | 7.50 | 8.00 | 6.00 | 6.00 | 5.00 | 6.00 | 6.50 | 6.50 | 6.00 | 6.50 | 7.00 | 7.00 |
| 9. Reline Service Brakes (includes material) | 11.50 | 12.00 | 17.00 | 14.00 | 13.00 | 12.50 | 14.50 | 12.50 | 13.50 | 12.00 | 12.50 | 12.50 | 13.50 | 15.50 | 12.00 | 12.00 | 13.00 | 13.00 |
| 10. Turn Down Brake Drums in connection with Job 9 | 6.00 | 6.00 | 10.00 | 7.00 | 6.00 | 6.00 | 7.00 | 6.00 | 6.00 | 6.00 | 6.00 | 6.00 | 7.00 | 9.00 | 7.00 | 6.00 | 7.00 | 7.00 |
| 11. Reline Emergency Brakes (includes material) | 11.50 | 12.00 | 17.00 | 6.00 | 5.00 | 12.50 | 14.50 | 6.50 | 6.50 | 12.00 | 12.50 | 12.50 | 13.50 | 15.50 | 12.00 | 12.00 | 13.00 | 13.00 |
| 12. Reline Both Brakes (incl. material) | 18.50 | 19.50 | 23.00 | 20.00 | 18.00 | 20.50 | 23.50 | 19.00 | 20.00 | 19.00 | 19.50 | 21.50 | 24.00 | 18.00 | 19.00 | 19.00 | 21.50 | 21.50 |
| 13. Overhaul Rear End | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 18.00 | 21.00 | 21.00 | 21.00 | 21.00 | 18.00 | 17.00 | 18.00 | 18.00 |
| 14. Overhaul Toggles | 5.00 | 7.00 | 6.00 | 6.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |
| 15. Overhaul Clutch | 10.50 | 14.00 | 12.00 | 10.00 | 10.00 | 14.00 | 12.00 | 10.50 | 10.50 | 10.50 | 11.50 | 10.50 | 12.00 | 12.00 | 11.00 | 10.00 | 12.00 | 12.00 |
| 16. Overhaul Transmission | 10.50 | 14.00 | 14.00 | 12.00 | 10.50 | 16.00 | 13.00 | 10.50 | 10.50 | 9.00 | 9.00 | 10.50 | 12.00 | 13.00 | 12.00 | 12.00 | 14.00 | 14.00 |
| 17. Overhaul Clutch and Transmission | 17.50 | 24.50 | 21.00 | 20.00 | 19.00 | 24.50 | 21.00 | 19.00 | 19.00 | 16.00 | 17.00 | 17.50 | 27.00 | 21.00 | 19.00 | 20.00 | 24.50 | 24.50 |
| 18. Overhaul Steering Gear | 10.50 | 10.50 | 16.00 | 14.00 | 10.50 | 12.00 | 12.00 | 9.00 | 9.00 | 11.00 | 12.00 | 12.00 | 16.00 | 14.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| 19. Rebuild All Springs and Shackles | 17.00 | 21.00 | 24.00 | 17.50 | 17.50 | 17.00 | 18.50 | 17.00 | 17.50 | 17.00 | 17.00 | 17.50 | 18.00 | 18.50 | 17.50 | 17.00 | 17.50 | 17.50 |
| 20. Oil and Grease Complete | 3.00 | 3.50 | 4.00 | 3.50 | 3.00 | 3.00 | 3.50 | 3.00 | 3.50 | 3.00 | 3.00 | 3.00 | 3.50 | 3.50 | 3.00 | 3.00 | 3.50 | 3.50 |
| 21. Tighten All Over—Body, Fender, Spring, Engine Bolts, Etc. | 6.00 | 7.00 | 10.00 | 7.00 | 6.00 | 6.00 | 7.00 | 6.00 | 7.00 | 6.00 | 6.00 | 7.00 | 8.00 | 7.00 | 6.00 | 6.00 | 7.00 | 7.00 |
| 22. Oil, Grease, Tighten—for regular 30-day service only | 2.50 | 3.50 | 4.00 | 3.50 | 3.00 | 3.00 | 3.50 | 2.50 | 3.50 | 3.00 | 3.00 | 3.50 | 3.50 | 4.00 | 3.50 | 3.00 | 3.50 | 3.50 |

Prices on application for cars and operations not listed.

These prices are maximum. In no case will the work described cost more, but it may cost less. For example, job No. 1 includes reface valves, ream valve seats, set timing, clean and adjust carburetor, vacuum screen, distributor, spark plugs, etc. If any of these operations prove unnecessary the charge will be reduced accordingly.

Terms can be arranged for the payment of complete overhauling or rebuilding jobs.

Radiator, fender, metal body, battery and electrical work

McANDREW COMPANY
REBUILDING AUTOMOBILE REPAIRING
TOWING

145 HAYES

MARKET 563

The McAndrew Company's flat rate announcement to customers

there are certain items of shop equipment that he CANNOT AFFORD TO BE WITHOUT.

If there is anything that Flat Rate demands from the dealer it is the use of shop equipment, and at the same time IF THERE BE ANY PLAN THAT WILL MAKE SHOP EQUIPMENT A PROFITABLE INVESTMENT, IT IS MOST

SURELY THE FLAT RATE SYSTEM OF MAINTENANCE MERCHANDISING. The two go hand in hand, and the dealers who are today making a profit in maintenance are the dealers who are using the Flat Rate plan, and the dealers who are using Flat Rate are the ones in whose shops will be found a judicious selection of shop equipment.

The Flat Rate Schedules appear on the next page.

Hupp 1923 Net \$2,635,788.50, With Total Sales of 38,279

DETROIT, April 6—Total sales by Hupp Motor Car Corp. for the year ended Dec. 31, 1923, were \$38,013,014.85, with net income of \$2,635,788.50. After dividends paid during the year and including one payable Feb. 1, 1924, the company had a balance surplus of \$9,393,939.09. Total sales of cars during the year were 38,279.

The financial statement of the company shows current assets of \$10,471,632.48 and current liabilities of \$3,712,935.54. Current assets include cash and U. S. certificates of \$1,359,208.91, receiv-

ables of \$941,653.56, and inventories of \$8,170,770.01. Accounts payable (current) are \$1,887,556.44. Plant assets are carried at \$7,902,512.88 and good will, trade names, etc., at \$3,858,920.93.

The company has capital common stock outstanding to the amount of 913,809 shares with a valuation of \$9,138,090, and this with the surplus makes a total capital and surplus of \$18,532,029.09. Total assets are \$22,359,244.63.

The statement includes the Hupp Motor Car Corp., the American Gear and Mfg. Co., Jackson, Mich.; the H. & M. Body Corp., Racine, Wis., and the Detroit Auto Specialty Corp., the capital stock of all being owned by Hupp Motor Car Corp.

U. S. Suit Against Packard Interests Finally Wound Up

WASHINGTON, April 6—The suit of the Packard Motor Car Company, and subsidiaries, against the United States government, growing out of the purchase under 40 contracts of approximately \$15,000,000 worth of equipment bought during the war, was wound up this week before the United States Court of Claims.

Under the award of the court the final payment of \$425,540.96 is to be paid the Packard company, and at the same time a counter-claim of the government's for \$453,520 was disallowed.

Flat Rate Schedules—Engine Division —Engine Overhauling

*Business Administration and Repair Shop Facilities Go With
Flat Rate for Greater Profit to the Dealer*

MAXWELL—After Car No. 193801

| Operation | Max. Time | Labor Charge | Parts Prices | Total Charge |
|--|-------------|--------------|--------------|--------------|
| REMOVE POWER PLANT ASSEMBLY FROM THE CAR. Does not include re-installation. | 3 1/2 hrs. | | | |
| INSTALL POWER PLANT ASSEMBLY IN CAR. Does not include removal of assembly from car. | 5 hrs. | | | |
| OVERHAUL MOTOR COMPLETELY. Includes fitting new pistons, new piston rings, new piston pins, new crankshaft, flywheel, flywheel housing, new cylinder block, new camshaft, all new engine bearings, timing gears, grinding valves, installing new valve guides, valve lifters, remove carbon, adjust tappets, clean and adjust carburetor, clean and adjust distributor, check timing, clean oil pan and screen, repair oil pump, clean and repaint engine. Does NOT include re-boring block or repairs to starting motor or generator. | 39 hrs. | | | |
| (A) For reboring block add Operation No. 705. | | | | |
| PERIODICAL OVERHAUL OF ENGINE. Includes installing new pistons and rings, new piston pins, tighten or fit new connecting rod bearings, grind valves, remove carbon, adjust tappets, clean and adjust carburetor, clean and adjust distributor, check timing, drain and clean vacuum tank, repair oil pump, blow out oil pipes. | 11 1/4 hrs. | | | |
| (B) CLEAN AND REPAINT ENGINE IN CONJUNCTION WITH 703. ADD | | | | |
| REMOVE AND RENEW ONE CYLINDER BLOCK. Requires same labor as Operation No. 702. | 2 hrs. | | | |
| REBORE CYLINDER BLOCK. Does not include removal or installation of block or any parts. If block is removed to be reground, sell Operation No. 704. | 39 hrs. | | | |
| REMOVE CYLINDER HEAD. REMOVE CARBON. REMOVE OIL PAN. REMOVE AND CALIPER PISTONS AND CYLINDER WALLS TO CHECK FIT. CHECK ROD BEARINGS AND CAMSHAFT BEARINGS. CHECK END PLAY IN CAMSHAFT. | 9 hrs. | | | |
| REMOVE CYLINDER BLOCK AND FIT PISTON. Includes—Fit new rods, pistons and bushings, clean and paint engine, grind valves, clean carburetor, check timing and tune engine. | 5 hrs. | | | |

DODGE—All Models

| Operation | Max. Time | Labor Charge | Parts Prices | Total Charge |
|--|-----------|--------------|--------------|--------------|
| REMOVE AND INSTALL POWER PLANT ASSEMBLY WITHOUT REMOVING BODY. Includes removal of transmission and clutch and reassembly. | 10 hrs. | | | |
| REMOVE AND INSTALL POWER PLANT FOR OVERHAUL. Includes complete tear-down and reassembly of engine, clutch and transmission. Does not include tear-down of starter, generator, vacuum tank, carburetor or horn. Parts subject to new replacement providing the same part can be replaced within the same time as required to replace the old. | 50 hrs. | | | |
| REMOVE AND INSTALL ENGINE ASSEMBLY FOR OVERHAUL. Includes same as Operation No. 702D, except that clutch and transmission are NOT included. | 46 hrs. | | | |
| REMOVE AND INSTALL ENGINE PARTS NECESSARY FOR CYLINDER REBORING. Includes the removal and installation of all parts necessary to rebore cylinders, grind valves and clean carbon. | 6 hrs. | | | |
| REBORE ALL CYLINDERS IN CONJUNCTION WITH Operation No. 704. Add..... or when block parts are removed for other work. | 5 hrs. | | | |

HUDSON SUPER SIX AND ESSEX 4-CYL. MODELS

| Operation | Max. Time | Labor Charge | Parts Prices | Total Charge |
|---|-------------|--------------|--------------|--------------|
| OVERHAUL ENGINE COMPLETELY. Includes—Put all parts of engine in first class condition, repair or renew necessary parts of engine, electrical system and carburetor. Includes painting engine, but does not include work on electrical system outside of starter, distributor and generator. | 65 hrs. | | | |
| RENEW CYLINDER BLOCK AND FIT PISTON. Includes—Fit new rods, pistons and bushings, clean and paint engine, grind valves, clean carburetor, check timing and tune engine. | 75 hrs. | | | |
| RENEW CYLINDER BLOCK AND FIT PISTON. Includes—Fit new rods, pistons and bushings, clean and paint engine, grind valves, clean carburetor, check timing and tune engine. | 15 1/2 hrs. | | | |

| PAIGE 4-66, 2nd and 3rd Series—JEWETT, 1st Series | | | |
|---|-----------|--------------|--------------|
| | Max. Time | Labor Charge | Parts Prices |
| Operation No. 707 | 14 hrs. | | Total Charge |
| REMOVE AND REPLACE ONLY ENGINE. | | | |
| Operation No. 704 | 13 hrs. | | |
| REMOVE AND INSTALL PAIGE CYLINDER BLOCK. Includes same labor as Buick as block does not carry crankshaft bearings. | | | |
| Operation No. 704J | 39 hrs. | | |
| REMOVE AND INSTALL NEW CYLINDER BLOCK ON JEWETT. Includes same labor as Maxwell Operation No. 704. | | | |
| Operation No. 702 | 85 hrs. | | |
| OVERHAUL ENGINE COMPLETELY. Includes same labor as listed for Maxwell Operation No. 702 and does not include reborring or regrinding. | | | |
| | 80 hrs. | | Jewett |

| BUICK—Models H to 22, Inclusive | | | |
|--|---------|--|--|
| Operation No. 704 | 20 hrs. | | |
| INSTALL AND REMOVE ONE CYLINDER BLOCK. Includes removing all rocker arm and valve actuating assemblies, remove crankcase and lower flywheel case, remove block, grind all valves and cage assemblies and reassemble. This make engine does not have main bearings in cylinder block casting. | | | |
| Operation No. 715 | 76 hrs. | | |
| PERIODIC OVERHAUL OF ENGINE. Includes regrind cylinders, grind valves, clean carbon, fit new rings, pistons, piston pins and take up on all bearings. | | | |
| | 58 hrs. | | |

| OVERLAND Model 4 and Later and WILLYS KNIGHT | | | |
|---|---------|--|--|
| Operation No. 702 | 37 hrs. | | |
| OVERHAUL ENGINE COMPLETELY. Includes same labor as Maxwell Operation No. 702. | 60 hrs. | | |
| Operation No. 703 | 26 hrs. | | |
| PERIODIC OVERHAUL OF ENGINE. Includes reft all connecting rod bearings, true up crankpins, clean oiling system, install new piston rings, new piston pins, clean carbon, grind valves, replace worn timing gears. | | | |
| Operation No. 703W | 25 hrs. | | |
| TAKE UP ALL BEARINGS, REPLACE PISTON PINS AND RINGS, INSTALL NEW TIMING CHAIN. WILLYS KNIGHT MODEL 20 ONLY. | | | |

| MARMON MODELS 34 AND LATER | | | |
|--|---------|--|-------|
| Operation No. 703 | 55 hrs. | | \$265 |
| PERIODICAL OVERHAUL OF ENGINE. Includes dismembering engine, cleaning carbon, grind valves, reft all rocker arm bushings, grind cylinders, fit new piston skirts, fit new piston rings, fit new piston pins and bushings, repack water pump and install new impeller, install new tappets, rollers and pins, install new tappet guides, install new timing gears, clean, inspect and repair of electrical equipment, reassembling engine, testing and tuning engine. | | | |

| FORD MODEL T AND FORDSON TRACTOR | | | |
|--|-------------|--|--|
| Operation No. 702 | 12 hrs. | | |
| OVERHAUL ENGINE COMPLETELY. Includes same labor as Maxwell Operation Model T | 16 hrs. | | |
| Operation No. 702F | 17 1/2 hrs. | | |
| MODEL T ENGINE, TRANSMISSION AND GENERATOR OVERHAULED COMPLETELY. | | | |

| PORT—4-Cylinder Models | | | |
|---|-------------|--------------|--------------|
| | Max. Time | Labor Charge | Parts Prices |
| Operation No. 704 | 14 1/2 hrs. | | Total Charge |
| REMOVE AND INSTALL ONE CYLINDER BLOCK. Includes same labor as for Buick as block does not carry crankshaft bearings. | | | |
| Operation No. 707 | 8 hrs. | | |
| REMOVE AND INSTALL BLOCK FOR REGRINDING. Does not include stripping of parts fastened to block. | | | |
| Operation No. 715 | 68 hrs. | | |
| PERIODIC OVERHAUL OF ENGINE. Includes regrind cylinders, grind valves, clean carbon, fit new rings, pistons, piston pins and take up on all bearings. | | | |

| CHEVROLET 400 and Superior Models | | | |
|---|---------|--|--|
| Operation No. 702 | 28 hrs. | | |
| OVERHAUL ENGINE COMPLETELY. Includes same labor as Maxwell Operation No. 702, plus overhaul of clutch. | | | |
| Operation No. 705 | 14 hrs. | | |
| REBOR CYLINDER BLOCK AND FIT NEW PISTONS, RINGS AND PINS. Includes removal of engine, removal of cylinder head and oil pan, remove rod and piston assemblies, rebores all bores, reassemble parts and reinstall engine. | | | |

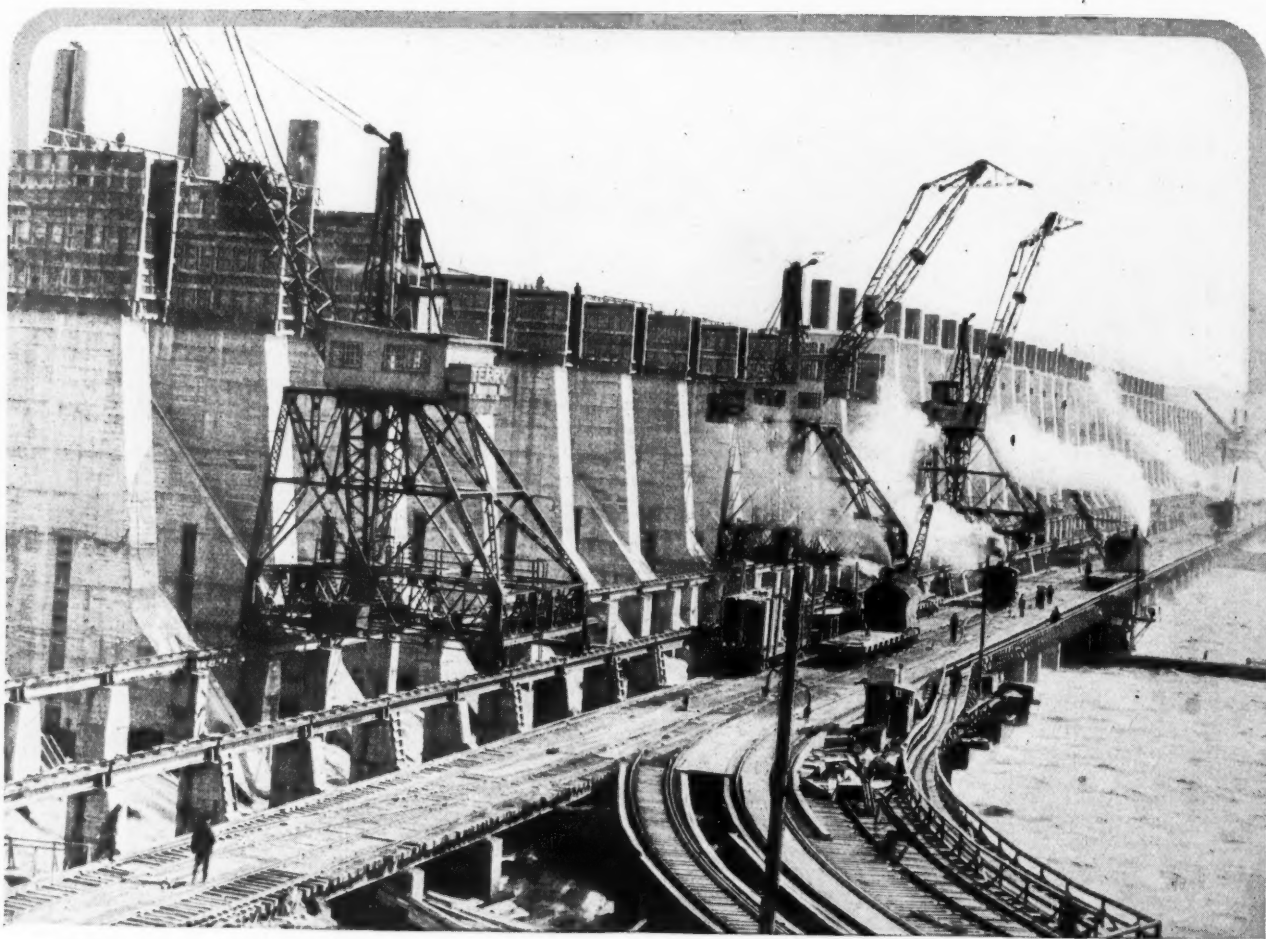
| OAKLAND—Models 34B-C-D | | | |
|--|---------|--|--|
| Operation No. 702 | 70 hrs. | | |
| OVERHAUL ENGINE COMPLETELY WHEN ENGINE IS REMOVED FROM CHASSIS. Includes complete overhaul, including reborring and honing cylinder block trueing up crankpins and main bearing journals. Does not include removal of engine from chassis. | | | |
| Operation No. 704 | 48 hrs. | | |
| RENEW ONE CYLINDER BLOCK. Includes same labor as Maxwell Operation No. 704 as bearings are carried in cylinder block casting. | | | |

| CADILLAC—8-Cylinder Models | | | |
|---|----------|--|--|
| Operation No. 715 | 100 hrs. | | |
| PERIODIC OVERHAUL OF ENGINE. Includes same labor as Studebaker Operation No. 715. | | | |

| PACKARD SINGLE SIX—Models 110, 120 and 133 | | | |
|---|-------------|--|--|
| Operation No. 710 | 15 hrs. | | |
| REMOVE ENGINE ASSEMBLY AND DISMANTLE FOR INSPECTION. | | | |
| Operation No. 711 | 11 hrs. | | |
| REPLACE ENGINE ASSEMBLY IN CHASSIS. | | | |
| Operation No. 702 | 147 hrs. | | |
| OVERHAUL ENGINE COMPLETELY. Includes same labor as Hudson Operation No. 702 and includes renewal of all hose connections, but does not include repair of electrical system. | | | |
| Operation No. 703 | 71 1/2 hrs. | | |
| PERIODICAL OVERHAUL OF ENGINE. Includes same labor as Maxwell Operation No. 703, plus removal of engine from frame and refitting of main bearings. | | | |

| STUDEBAKER Models Big, Special and Light Six | | | |
|---|---------|--|--|
| Operation No. 715 | 76 hrs. | | |
| PERIODIC OVERHAUL OF ENGINE. Includes regrind cylinders, grind valves, clean carbon, fit new pistons, rings, piston pins and take up on all bearings. | | | |
| | 87 hrs. | | |
| BIG AND LIGHT SIX. | | | |

MOTOR AGE'S PICTURE PAGES



Above is shown a portion of the 3,000 foot dam at Muscle Shoals. The dam when completed to its full height, 95 feet, will conceal the pipes shown here

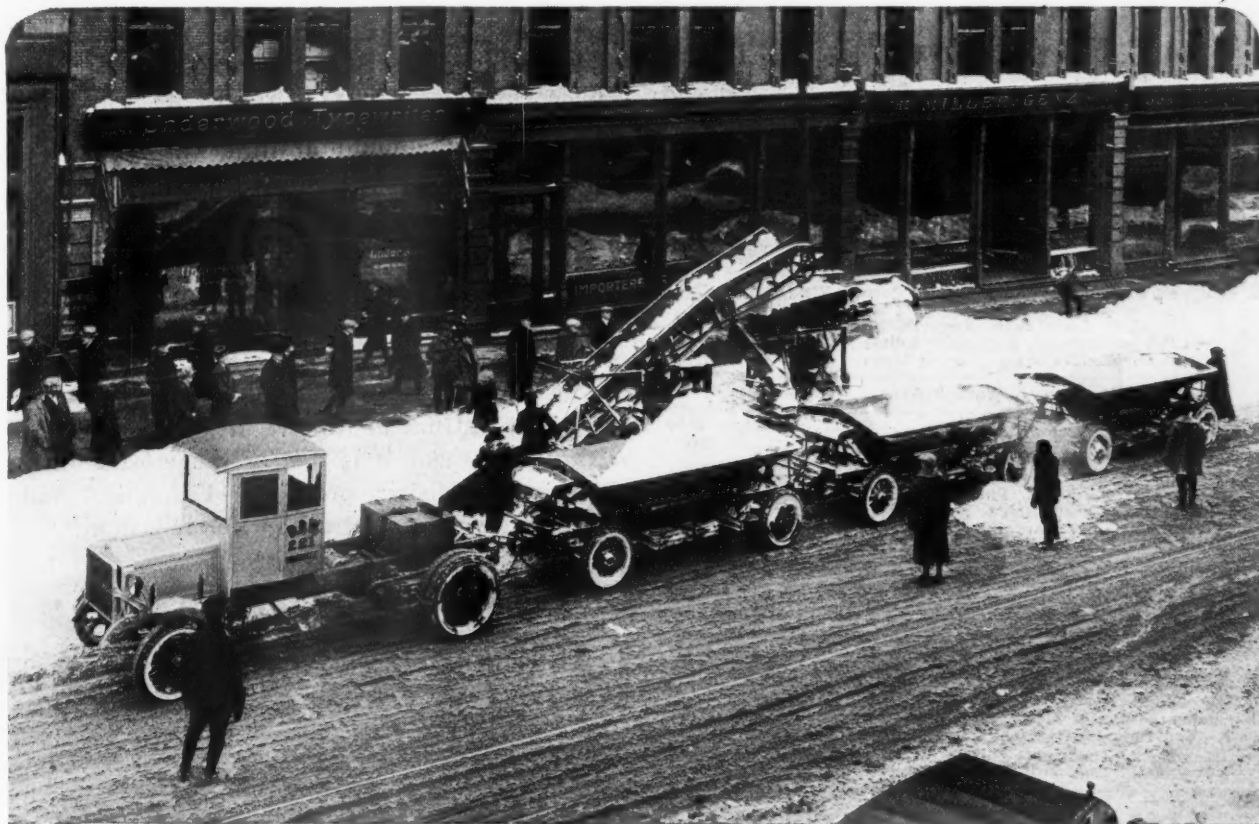


Ten thousand miles in thirty days in a Buick four. That is what this car accomplished. The Garber Buick Co., Saginaw, Mich., sent this car out through all of the snow which falls in Michigan which is about 80 per cent of all that falls



Records are things to be broken and now comes Sergeant Cole, having broken the world's non-stop record, having driven this car six days and nights without stopping

S OF AUTOMOTIVE INTEREST



Doing it the automotive way enabled the city of Milwaukee to clean up the effects of one of the worst blizzards in its history at about half the cost and in half the time



The shootin's good near Prescott, Ariz.—Capt. Edwin Hendricks knocked off this pair of mountain lions and several others while out for a ride one afternoon, recently



Studebaker believes in high advertising—here's one of theirs on top of a mountain near a summer resort in Spain

MOTOR AGE

Reg. U. S. Pat. Off.

Vol. XLV

Thursday, April 10, 1924

No. 15

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Square Deal for the Motor

VARIOUS associations of the automotive trade have joined a movement designed to create what has been loosely called "greater respect for the automobile."

While a wording, or slogan, shooting straighter to the mark and carrying a bacon-getting wallop would be better for the purpose, the phrasing which has been quoted is sufficiently descriptive just here. In our family of automotive people its meaning is well understood.

Through this movement it is hoped to disabuse many minds of erroneous notions. The automobile is not being given a square deal by headline writers of the daily press. They like that line "AUTOMOBILE ACCIDENT" and they use it with overworked freedom.

Members of the automotive trade know that a great proportion of the so-styled "automobile accidents" could more accurately be called something else. They know, moreover, that the automobile is given blame for iniquities that should be charged to other accounts.

Unfortunately, a large element of the American public

is not aware of these things. And it is important to set it straight.

Encouragement of the movement to which we have referred, from the standpoint of the automobile tradesman, is a matter of pure business. It is bad for even a small portion of the people to associate the motor vehicle with evil things, to regard it as an inevitable destroyer and an agent of the devil—bad for the automotive industry.

On the other hand, it would be a fine thing for the automotive industry were sentiment of an entirely opposite character set up. The confidence and respect of the public, already enjoyed by the automobile business in large measure, we believe, are fundamental sales essentials.

Don't hoot the man who thinks the automobile is a dangerous instrument to have at large. Convince him of the truth—that it is one of the most constructive exponents of modern progress. For it is. And that it is a safe vehicle of travel. For it is that.



Showing the Used Car

HOW about an attractive showroom for the display of used cars?

This will not solve the used car problem, but as suggested by one of the speakers at the Illinois Automotive Trade Association's convention, it should at least facilitate used car sales. But even that is something.

If you treat the used car as junk you must expect to accept your due share of junk prices. Even a pearl on an ash pile will not be quickly recognized as a valuable gem. As displayed by the jeweler it is a thing though that even those who are not gem-wise instantly admire and covet.

Perhaps it is a far cry from pearls to some used cars, but the theory of display is the same.

Your wares will not be given a higher appraisal by a prospect than you seem to give them yourself.

And besides, as this same speaker declared, the used car buyer takes just as much pride in his possession as the buyer of a new car. Pause a moment and let that thought soak in.

One used car in an attractive showroom is worth two in the alley or murky wareroom, so to speak.



These We Have Always With Us

ACERTAIN automobile dealer in Illinois failed recently. This, you say, is not unusual for Illinois or any other state—and, of course, it isn't. Used cars again, of course. Nothing causes so many failures in automobile dealers as used cars. For years, associations and dealers and factories have been trying to find some way out of this danger.

Some have had more success than others but in the words of the dealer who failed, "These," indicating the used cars which the auctioneer was selling, "we shall have

always with us and there is but one way to get around it—buy them right and the selling will be as nothing. The dealers who still look for the sale of the new car and do not consider the big allowance on the used car are the ones who will, sooner or later, see their business as mine is—broke."

So much has already been said about "buying them right" that it seems almost useless to repeat anything here but just a few blocks from the dealer who failed is another who has a used car in his place. The reason? He buys or accepts not more than five used cars at a time and he accepts them at a low rate or not at all. When he gets five, he will accept no more until these are sold. There may be something in this.



Factory Stabilization

IT is remarked by an executive of the General Motors Corporation that the manufacturing end of the automobile trade is steadying down to the even tenor of stabilization.

The distributing end, he notes, has not reached that stage, being far from it. It is harder to adjust and control.

Of course the thing for which to hope is stabilization of all branches of the business. Naturally factory stabilization is first approached. Without factory stabilization we could not expect to realize stabilization of distribution—for the factory is the basic production medium.

With the factory well stabilized the way is finally clear for more orderly conditions in distribution. Therefore, the assertion that the factory is about to find itself in this gratifying manner is worth something more than passing notice.

Let all production in this country attain the stabilization stage and distribution will become a much more simplified problem.



Get Busy on This!

THE first skirmishes in a legislative fight are important, but they comprise only a preliminary stage of the engagement. Those coming last count for everything, however, and until the final gong and eventual decision it is well to bear in mind that in matters legislative there is many a slip betwixt the beginning and the finish.

So it is with the excise tax bill as it affects the automotive industry.

The 1925 revenue measure which was passed by the House now is before the Senate, having gone through committee deliberations.

In its acceptance of the House bill, substantially as passed, the Senate finance committee made no change in the section which provides exemption for only a certain class of trucks. Hence the importance of reminding this body of its duty toward the automotive industry cannot be too strongly stressed. There is a feeling in this trade

that the House bill should be maintained in those provisions relating to the automotive industry, with the truck tax so arranged that it would concede \$1,000 exemption on all trucks regardless of price.

Interested associations and individuals who have not taken steps in this direction already should get busy—and at once.

Let these senators know what is due the automotive trade in the way of tax adjustments.

Night letters from associations and local trade groups would not be misapplied.

Numerous other interests are making the welkin ring at the national capitol with their suggestions and the automotive industry certainly is aware of the fact that a wee voice will not be heard above the din.



Last Call

NOT ONLY is the spring rush well upon us, but it has started to make 1924 look like *the big year*. Maintenance of the thousands of cars sold in years past, however, is still going about begging in more than one instance. Dealers should long ago have passed the stage where maintenance of automobiles meant a loss of money or at most, a breaking even.

Not only will the shop with the better equipment get the business but it will get the money and keep both, which is as it should be. You, too, can get in on the money that will be spent but you will have to act quick.



There's Work to Do

THE spring rush is on—a little less than a week ago Illinois had its first "nice" day and in the spring a young man's fancy seriously turns to thoughts of motors.

Imagine walking into a transportation store, the agency for one of the best known automobiles in the country at a little after eight o'clock at night when every one is buying automobiles and finding only one salesman in the place. There were fully fifteen interested people standing impatiently about, looking at the models on display and wishing that they could get in and drive one away.

The salesman was impatient and naturally nervous—he couldn't handle everyone himself. Three people walked out, others followed and he was deprived of even a chance to talk to them.

Put plenty of men there—if you pay them on commission it won't cost any more and it'll probably make you a whole lot.



Taxes Again

WE ARE assured by newspaper dispatches that a tax reduction will be made in the 1923 income tax program to be effective in June. The man who saves five, ten or twenty dollars on his income tax will be glad to put that into a spotlight, bumper or spare tire for his car.

Automotive Tax Shaved in Committee

Accepts House Bill and Votes For an Additional Reduction

Repeal of Levy on Truck Bodies Sold Separately Under \$200 Is Recommended

WASHINGTON, April 4—Accepting the partial repeal of the federal excess taxes on automobiles as voted by the House, including repeal of the 3 per cent tax on automobile trucks, the chassis of which sell for less than \$1,000, and the cutting in half of the 5 per cent tax on automobiles, tires and accessories, the senate finance committee last night, in addition, repealed the tax on automobile truck bodies when sold separately at a price of \$200 or less.

The total amount of revenue involved in these reductions was estimated at \$25,000,000.

Motions made by Senator Walsh, Democrat, Massachusetts, to repeal entirely the tax on automobile truck and tires and accessories brought from Chairman Smoot the declaration that it was "just an attempt to get the senate on record when all members of the committee should know extensive reduction in these excise rates is going to be impossible."

Half Million Saving

The bill as reported out of the senate finance committee, so far as the automobile industry is concerned, is substantially the same, with the exception of the \$200 exemption on truck bodies, and will mean an additional saving of one-half million dollars to the automobile industry.

Inclusion of the exemption on truck bodies, it is thought, will not precipitate a fight on the automobile section of the measure when it goes to the house and senate conferees to be rewritten.

The administrative features of the automobile section will be rewritten in order to simplify the method of tax collecting and obviate the necessity of collecting the individual tax from the thousands of automobile dealers and garagemen throughout the country.

The revenue act, it is expected by Republican leaders, will be passed by the senate within three weeks. Then it will go to the conference and will not likely become law for six weeks yet.

As to the Bonus

The most important development is the coupling of the revenue act measure with the bonus. During the past three days of this week Secretary Mellon has been closeted with the senate finance committee going over revenue producing features of the measure. If the senate passes the bonus, over the President's veto, it will mean the raising of \$125,000,000 annually for bonus payments.

They Can Dig Gold in Slack Times

PORTLAND, Ore., April 6—The Fields Motor Car Company, Chevrolet distributors here, soon can claim distinction of being the only automobile distributing firm in the country doing business over a known gold mine.

The company is erecting a new building in the west side business district. Workmen this week in sinking a shaft for one of the piers brought up a quantity of ore in which gold in minute quantities was plainly visible.

Some of the ore was examined but was not found sufficiently rich in gold to get the Chevrolet dealers excited.

LACK HORSE SENSE

WASHINGTON, April 6.—The Washington section of the Society of Automotive Engineers will hold its regular monthly meeting on April 4, the principal speaker of the evening to be A. W. Herrington, who will talk on "Accessibility. Its Effect Upon Maintenance Costs and Flat Rate Charges."

Many automobile manufacturers lack horse sense in their car construction, Mr. Herrington will point out to his audience. As an example, he will cite the fact that some automobile designers, "by the exercise of a little of this horse sense could save endless trouble to the service station and expense to the car user, in the location of nuts and bolts now hard to get at."

SALES 15 PER CENT BEHIND

TOLEDO, April 6.—Sales of motor cars at retail in this district are running about 15 per cent below the same period of last year. Dealers are at a loss to explain the hesitancy of the buying public but believe that the weather is having considerable to do with slack buying.

All look for an increase in the next few weeks. There is only one or possibly two dealers in the city who do not have all the cars they want at the present time and few are taking any more in the face of the selling conditions.

EVERY COMPANY BANKRUPT

CHICAGO, April 6—Voluntary petition in bankruptcy has been filed by the Avery Company, Peoria, Ill., manufacturers of tractors and farm implements. Liabilities are put at \$6,000,000 and assets at \$8,000,000. It is said liabilities do not include stock and other obligations. John W. McDowell of the Title Trust Company, Peoria, has been named receiver.

First Quarter's Productions of Cars and Trucks 1,040,092

Output for Initial Three Months Approaches That of Last Year's Second Fourth

NEW YORK, April 7—Production of cars and trucks the first three months of this year more nearly approached the output of the second quarter of 1923 than it did that of the first quarter a year ago. In the second quarter of last year, manufacturers were trying to catch up on a big spring demand that had caught them unprepared. As a result, record breaking schedules were adopted, April output reaching 382,695, May 394,988 and June 378,509.

Compared with this total of 1,155,292 is the aggregate of 1,040,092 for the first quarter of this year. In the first quarter of last year production amounted to 875,503. Whereas the industry a year ago was attempting to meet the demand after it came, this year all efforts have been directed toward meeting it beforehand and thus preventing such a shortage of cars as caused a loss to maker and dealer last spring. This accounts for the larger first quarter figure.

Although there was curtailment of schedules by some manufacturers the latter part of March, it was not great enough to offset the advance made by other producers. The month, consequently, returned a high total of 356,509 cars and trucks, only slightly less than that of February and slightly more than that of March of last year.

Whether April will approximate the figure reached last year, in view of the high production maintained through the quarter just ended, will be determined largely by weather conditions, which proved the primary factor in holding sales back in March. In few distributing centers of the country did sales approach in any way a satisfactory level last month. Too much rain or too little rain, cold, snow and bad roads all figured in retarding the forward movement in automobile buying.

A conservative pace is being followed by most producers until April gives definite assurance that the business that did not develop in March was merely deferred. Some makers who did not operate at capacity through the winter months and find that dealer stocks are low at present are in a position to maintain strong programs, but as a rule throughout the industry caution is manifesting itself. Indication of this policy has been given in the fewer commitments placed with parts makers.

While keeping operations temporarily from mounting to new high levels, the industry will stand in readiness to increase schedules as soon as reports from the retail field warrant.

Chicago Distribution Agency Taken Over by R. H. Collins

**Well Known Figure in Industry to
Handle Maxwell, Chrysler and
Chalmers Cars**

DETROIT, April 3.—R. H. Collins has assumed charge of the distribution of Maxwell, Chrysler and Chalmers cars in Chicago and surrounding territory.

This announcement, made by J. E. Fields, general sales manager of the Maxwell-Chrysler-Chalmers companies in Detroit, re-unites two of the outstanding figures of the industry—Walter P. Chrysler, president and chairman of the board of directors of Maxwell, and Mr. Collins. For years they were associated together, first at Buick, and later in General Motors. The Maxwell-Chalmers Sales Company, which Mr. Collins has purchased, has been a factory branch for several years.

In going to Chicago Mr. Collins is returning to the state of his birth. Born in Kirkwood, Ill., the son of a farmer, he there received a smattering of book education which took him through the third grade. When 18 years old he found employment with Bradley, Wheeler & Co., large Kansas City wholesale farm implement dealers. This was his start in business, and it was as porter. But it was not long before the porter became city salesman. After four years he was sent on the road. A few months later he resigned to become traveling salesman for the John Deere Plow Co. He rose rapidly to be sales manager, then to manager in Kansas City. Here he made his first contact with the automotive industry. He frequently went to Flint to place orders with the Durant-Dort Carriage Co. There he met W. C. Durant, who had just organized the Buick Motor Co. This was in 1904. Mr. Collins accepted a position as Kansas City Buick branch manager. His success was such that less than four years later he was called to Flint as Buick sales manager.

His achievements with Buick made him an outstanding figure in the entire automotive industry. After Mr. Durant became president of General Motors, one of his first acts was to elevate Mr. Collins from sales manager to vice-president of General Motors. Shortly thereafter he became president and general manager of Cadillac, continuing as a General Motors vice-president. It was during this time—from 1911 to 1918—that he came into close association with Mr. Chrysler, who rose rapidly from a Buick works manager to vice-president in charge of production for all the General Motors units.

Early in 1921 Mr. Collins resigned from Cadillac and General Motors to organize the Collins Motor Car Co., with the intention of building and marketing his own car. In October of that year he and his associates assumed the management of Peerless, with Mr. Collins as president and general manager. He re-

Warn Drop in Tire Prices Possible

AKRON, O., April 6.—An official bulletin of the Mid-west Rubber Association, which has been closely studied here during the past weeks, warns the members that a price drop in tires is not wholly unexpected for June or July as one of the means to be used by the larger rubber companies in the fight against the small producers.

The bulletin, which quotes one of the presidents of one of the member companies also states that the small producer of tires must depend upon his acquaintances and upon the region contiguous to his factory for his distribution rather than upon a distribution covering a wide area and making branches and other overhead necessary.

With the exception of the Mid-west bulletin tire prices have not been discussed in the Akron center for several weeks.

maintained as such until Dec. 27, 1923, when the company's directors accepted his resignation of Oct. 31.

Durant Motors Made Profit of \$2,715,226.18 Last Year

NEW YORK, April 6.—Manufacturing activities of Durant Motors, Inc., and its various subsidiaries in 1923 produced a net profit of \$2,715,226.18, after proper depreciation charges of every description and after providing for Federal and state taxes, according to the annual report of the corporation as made by President W. C. Durant.

The balance sheet of Dec. 31 shows assets and liabilities of \$73,871,955.36. The bulk of the assets is found in "investments in and advances to allied companies," which represented \$41,378,676.93, and in "participating contracts" \$23,488,000. Cash on hand and in banks is reported at \$1,044,627.98.

GORDON MAKES PURCHASE

CHICAGO, April 6.—David Gordon, head of the Gordon Motor Company, one of this territory's most active Overland dealers, announces that his company has taken over the service and parts department of the Overland Motor Company's plant at 19 West 26th Street.

COURTLAND BABCOCK DEAD

MILWAUKEE, April 6.—Courtland Babcock, president of the Babcock Automobile Spring Co., Milwaukee, died of cerebral hemorrhage while dining at the Milwaukee Athletic Club on March 27. He was a native of Kalamazoo, Mich., and spent the greater part of his life in New York in the investment security business, coming to Milwaukee in 1914 to organize the spring company. He was 68 years old.

April Starts Out in Detroit With Production Slowed Down

**Speeding Up Month's Output at
Many Plants Hinges Perhaps
Upon Weather Conditions**

DETROIT, April 2.—Without an early and pronounced break in weather conditions April will be lucky to show itself as good a production month as March. According to general expression, the industry goes into the early part of the month with production definitely slowed down. In many of the larger producing plants unless the break in the weather comes with a consequent hastening of the buying impulse it is practically certain that operations will be slow through the month.

This slowing of operations is confined for the most part to those plants which have been operating on a policy of maximum production through the winter months and which consequently already have a large bank of cars. Manufacturers who were on part schedule through the winter are now manufacturing on capacity schedules and are striving for increased production.

Warm Weather Needed

Should production for the month show a total as high or nearly as high as the earlier months it will be due in large part to the continuance of unrestricted operations by the Ford Motor Co., which has set a schedule of 200,000 cars for the month. This will represent an increase of 15,000 to 20,000 over March. Cars are moving at retail at slightly better than this rate, the factory declares, and some inroads are being made into Ford dealer stocks, but it will take a stretch of good warm weather to get buying moving at the rate that has been anticipated.

GURNEY DEAL RATIFIED

NEW YORK, April 6.—Stockholders of the Marlin-Rockwell Corp. have ratified the plan for the acquisition of the Gurney Ball Bearing Co. for \$2,722,800 of 7 per cent preferred stock and 133,685 shares of no par value common. The stockholders also have authorized an increase in the capital to provide stock to be given in exchange for the Gurney company.

This is the deal announced in the March 13th issue of Automotive Industries. Now that it has been approved, it is stated that the joint companies will be controlled by the Gurney interests, headed by H. K. Smith, operating the Marlin-Rockwell plant at Plainville, Conn., and the Gurney establishment at Jamestown, N. Y. Through the consolidation, the bank debt of the Marlin-Rockwell Corp. will be entirely wiped out.

ONE MOTOR FOR EACH 6.5

SALT LAKE CITY, Utah, April 5.—Utah now has one automobile for every 6.5 of her population.

Associated Tire Dealers Is New Organizatoin in St. Louis

Membership Fee Based Upon Company's Gross Sales Without Affecting Voice

ST. LOUIS, April 6.—An organization of tire dealers in St. Louis termed the Associated Tire Dealers of St. Louis was formed last week at a meeting held at the Claridge Hotel. A constitution was adopted together with by-laws and a committee appointed to submit nominees for officers of the association who are to be elected at the next meeting.

Thomas F. Carpenter, Carpenter Tool Co.; Joseph Roberts, Roberts & Hail Tire Co.; Donald J. Henry, Henry Maginnis Tire Co.; Emil L. Meyer, E. L. Meyer Tire Co., and H. F. Schweighoefer of the Standard Tire Co., comprise the nominating committee.

Dan F. Hyland, president of the Automobile Accessory Association of St. Louis, and George C. Porter, president of the Associated Automobile Service Companies of St. Louis, attended the meeting and told the tire men of the advantages to be derived from organization.

The constitution adopted provides that the membership be divided into active, associate and honorary members. The active members who alone may vote, are divided into three classes with equal voice in the affairs of the association but with varying dues. The tire dealers whose sales reach or exceed \$50,000 per annum pay entrance fees of \$20 and monthly dues of \$5. Those whose sales reach \$10,000 and fall below \$50,000 pay an entrance fee of \$10 and \$2.50 monthly and those whose sales annually are \$5000 or less pay an entrance fee of \$5 and monthly dues of \$1.25.

This is the second tire dealers organization in St. Louis. The first one went out of business almost a year ago.

14,000 WITNESS EXHIBITS

RICHMOND, Va., April 6.—Richmond's annual automobile show closed after 14,000 persons had visited elaborate exhibits in the Coliseum Skating Rink. Dealers report that the show materially helped business and about 30 cars were sold directly as a result of the exhibition.

A fashion show conducted during the week was an added attraction, and the dealers dined with Lynn M. Shaw, national general manager of the American Automobile Association, during the week.

Mr. Shaw talked on the problems confronting the dealer.

VOTE FOR AFFILIATION

DETROIT, March 31.—Flint Automobile Dealers Association voted to affiliate as a body with the Michigan Automotive Trade Association. Of the seventeen members of the Flint Association eight formerly were affiliated with the state body, the action therefore resulting in the enrollment of nine new members under W. D. Edenburn's banner.

New Record Made for Motor Imports

WASHINGTON, April 6.—Assistant Trade Commissioner E. G. Pauly this week cabled the United States Department of Commerce that Australian imports of motor vehicles during January reached 1,570,000—the largest amount ever recorded for this item in the history of the country. Although money continued very tight in Australia during February and the first half of March, the advices state that general conditions throughout the commonwealth "are considered healthy." Bankers are declared to have considerable outstanding credit in England and America which is favorable to imports, and savings deposits are increasing satisfactorily. Australian sterling dollar exchange rates, both buying and selling, continued to decline slightly during the month ended March 15, the advices conclude.

Republic Pneumatics Making at Youngstown Plant Stopped

NEW YORK, April 2.—The Lee Tire & Rubber Co., controlling the Republic Rubber Co., of Youngstown, N. Y., has stopped production of Republic pneumatics at the Youngstown plant and will transfer Republic pneumatic activities to the Lee factory at Conshohocken, Pa. The Youngstown plant will devote all of its attention to solid truck tires, inner tubes and mechanical rubber goods.

This announcement is made in a statement issued by the Lee company, which reports that the current rate of tonnage production of mechanical rubber goods at Youngstown is the largest in the history of the company and that the full plant equipment there will be needed soon for mechanical rubber goods, truck solids and inner tubes.

"By concentrating our pneumatic tire output under one roof at Conshohocken, we complete our reorganization plans following our purchase of the Republic plant," says the Lee company. "During 1923 the Conshohocken plant capacity was enlarged with machinery and equipment of the latest type to permit of the manufacture of 4000 tires daily. The Lee plant now is in position to manufacture tires of both Lee and Republic brand on a most economical basis."

TO MAKE BATTERIES

MARION, Ohio, April 6.—The E. A. Thiel Co. has opened a department for the manufacture of storage batteries for all makes of automobiles.

Find Drop for Quarter But 11 Per Cent Despite 43 in March

Everything Considered, Indianapolis Trade Thinks It Has Come Out Well

INDIANAPOLIS, April 6.—New car sales in Marion County (in which Indianapolis is situated) for the first quarter show a decrease of but 11 per cent, as compared to the first quarter of last year. Due to larger sales than usual the first two months, the drop of 43 per cent under March, 1923, records does not make so bad a showing for the first quarter. As far as figures show the whole list of the classes doing volume business made gains the first two months and dropped considerably below March of a year ago. A confusing situation in the registration bureau from January 15 to March 10 makes month by month comparison with last year's sales, measured by registration figures, rather complex. The first quarter records, however, while showing a loss, are very cheering in view of the worst March weather in about ten years, with more than half of the season's snow recorded during the month.

Total March, 1924, sales for Marion County were 1221, as compared to 2144 a year ago; a decrease of 43 per cent. The total for the quarter this year for Marion County was 3529, as against 3962 of last year, or a loss of almost exactly 11 per cent. Ford and the low priced field as far as records have been completed, show about the same relative loss for the quarter, with the March loss percentage slightly larger. Here again the weather having held up building and construction campaigns which a year ago were in full blast by mid-March may have been largely to blame for the poorer showing in the lower priced field during the last thirty days. Distributors generally look for state registrations to reflect the showing of Marion County in a proportionate loss as against a year ago. The state figures will not be complete for two weeks due to 90 registration bureaus in the state. April, in spite of another snow, April 1st, is opening up better than did March.

DODGE DELIVERIES INCREASE

DETROIT, March 31.—Dodge Brothers deliveries at retail during December, January and February were 32 per cent in excess of any similar quarter in its history. Following this retail deliveries for the first two weeks of March have been over 4,000 cars each week, which is the first time this figure has been reached so early in the year. Each week's delivery is establishing a new mark, the factory reports.

NEED LARGE TRAFFIC FORCE

WILMINGTON, Del., April 6.—The traffic problem has become so acute here that the Department of Public Safety is planning to double the traffic police force.

Packard and Wire Wheel Corp. Win Legal Tilt Over Patent

Cowles Invention Privileges Belong to Plaintiffs, Rules U. S. District Judge in Chicago

CHICAGO, April 6.—Holding that the Overland Motor Car Co. of Chicago has infringed upon the patent rights of the plaintiffs and enjoining such infringement in the future, Judge Adam C. Cliffe of the United States District Court here recently rendered an opinion in which he confirmed the patent rights to the Cowles wire wheel invention which have been claimed by the Packard Motor Car Co., Detroit, and the Wire Wheel Corporation of America, Buffalo.

The patent in question was acquired by the Packard company from Edward P. Cowles, inventor, the Packard company thereafter selling exclusive manufacturing and merchandising rights, except as to itself, to the Wire Wheel Corporation.

It was contended by the Overland Motor Car Co. of Chicago that subdivision of the inventor's original rights constituted abandonment of his claims and therefore put the invention beyond recapture. It further contended that in view of prior art the claims at issue were not for a patentable invention.

On both points the court overruled the defendants. The opinion states that the defendant failed to prove the unpatentability of the article in view of prior art, it being held by Judge Cliffe that the device in question is in fact a new and useful invention subject to patentability.

The object of the invention, as set forth in the record, is to provide for a front and rear hub so constructed as to permit a convenient and quick interchange of wheels, or the substitution of a spare wheel for a disabled wheel without taking down the bearings, by making all the wheel hubs substantially similar and by providing hub receiving members for the front steering spindle and the rear driving axle, respectively, with parts of similar exterior form so that the wheels may be interchangeable on the front steering spindle and the rear driving axle.

STATEMENT BY WILLIAMS

BUFFALO, April 6.—In commenting upon the decision of Judge Cliffe in Chicago in the case of the Packard Motor Car Co. of Detroit and the Wire Wheel Corporation of America, domiciled here, George M. Williams, president of the local organization, made the following statement:

"Under the ruling of Judge Cliffe, all manufacturers, dealers and users of wire wheels which are demountable at the hub infringe upon the Cowles patent. The Wire Wheel Corporation of America will be entitled to royalties upon every wire wheel manufactured, used or sold since the patent was first granted."

The corporation is the successor of the Houck Wire Wheel Co. The Cowles patent is one of the most valuable owned

Large Depot Planned For Stage Lines

OAKLAND, Calif., April 6.—Announcement is made by officials of the California Transit Company that it has purchased land on the west side of San Pablo Avenue, between 21st and 22d Streets, and will erect immediately a passenger and express terminal and stage depot, to cost in excess of \$100,000. The new property fronts 135½ feet on San Pablo Avenue and has an average depth of 350 feet.

Several months ago the transit company purchased a large tract west of Market Street, at the head of 20th Street, also in Oakland, and has just completed thereon a new factory and garage building at a cost of \$100,000, covering 60,000 square feet.

Announcement also is made that the California Transit Company will extend immediately its rapid transit stage lines in the four counties of Stanislaus, Alameda, Contra Costa and San Joaquin.

by the corporation, which manufactures its product under the name of the "Buffalo Wheel." A financial statement just issued by the corporation shows that the month of February just past was the most successful in history.

More Business Than Ever On Books of Cole Motor Company

INDIANAPOLIS, April 6.—The Cole Motor Car Co. is now producing 10 cars a day and officials state that the company has more business on its books than ever before. It is stated that the keynote of the company's policy will continue to be quality rather than quantity.

The Cole company now has 35 distributors and 200 dealers. The financial condition of the company is reflected in the fact that it has no indebtedness except for current bills. About 60 per cent of the present production is enclosed cars.

REPORT NET INCOME

NEW YORK, April 6.—A net income of \$3,098,684 after depreciation and Federal taxes is reported for 1923 by the American Chain Co., Inc., compared with \$1,000,375 in 1922. This is equivalent to \$5.16 a share earned on the 350,000 shares (par \$25) 8 per cent Class A stock and 250,000 no par common shares. After annual dividends of \$2 on common both issues share equally in any further distribution.

The company's consolidated income account for 1923 shows an operating profit of \$4,776,116, against \$2,074,014. Against this is charged \$981,161 depreciation, \$444,944 interest and \$251,327 Federal taxes.

Hard April Job If Dealers of New England Meet Ambitions

Busy Delivering Orders for After April 1 and Prepared to Hustle Later

BOSTON, April 6.—New England dealers are entering April as a whole with a feeling that they have a lot of work ahead of them to run their sales totals up to the quota they set out to sell. In Boston, where the distributors are located, a number of them have figured out that the show this year was about 50 per cent of what they expected in orders. They realize that the storm kept the outside buyers away, and the huge crowds the closing days interfered with buying somewhat. They will be very busy next week delivering cars to those who never take them until after April 1 so as to escape the property tax. Then they will have to hustle harder than ever.

Sales of the high priced cars have been exceptionally good. Those in the medium priced field have held up fairly well, dealers say. Some of the distributors of lower priced cars say orders are not coming in as they should. Others report that they are satisfied with conditions. Talking with the salesmen up and down the line a number state that sales could be better.

Summed up briefly it appears as if the competition is coming so hard and fast that organizations not welded together as units are feeling it and cannot stand the pace like those who work as teams.

FINANCE CARED FOR

BUFFALO, April 6.—Recent published reports referring to the possibility of new financial arrangements being made by the Pierce-Arrow Motor Car Company were not authorized.

The company's president, Myron E. Forbes, states that arrangements have been concluded with the company's bankers for the renewal of the \$1,750,000 one-year 6 per cent notes maturing on April 16, 1924. Arrangements have also been made with the banks to increase, if necessary, the company's loans in connection with its plan to broaden its market by introducing a new moderately priced car as an addition to its present line of cars, trucks and motor busses.

The company today has a cash balance of over \$1,500,000, and no new financing is necessary.

CYLINDER GRINDERS MEET

OMAHA, April 6.—Constructive plans for handling an increased volume of business for 1924 was the keynote of a meeting of the Mid-West Cylinder Grinders Association here.

Representatives of cylinder grinding and motor rebuilding companies from eight states took an active part in the discussions which were led by John J. Fuchs, Jr., president of the Mid-West Grinders Association and president of the national association.

Foreign Markets Analyzed in Survey

Promise Car at Half Cost of Cheapest Put Out by U. S.

Five Hundred of New Czechoslovak Models Are to Be Produced This Spring

WASHINGTON, April 6.—Proposal of the Czechoslovak government to manufacture small light automobiles at one-half the cost of the cheapest car built in the United States is creating much interest and considerable adverse comment, according to cable advices received here this week at the United States Department of Commerce from Consul C. S. Winans at Prague.

"The state war material factory at Brno, Moravia," the advices state, "has lately experimented with two of the new automobiles and it is stated that 500 of these cars will be put on the market during the spring of 1924. It is stated that the price of these government built cars will be 18,000 crowns against 36,000 crowns, which is the current local price of the cheapest car built in the United States.

"The distance between the front and rear axles will be 210 centimeters and distance between wheels 100 centimeters. The weight of the complete car will be approximately 450 kilograms. The car is provided throughout with ball bearings and is driven by a four-cylinder, two-phase, 12 h.p. motor. Adverse comment in the newspapers is based chiefly on the very low price and the lack of a market for such a small light car."

NEW ENGINE PLANT

MOLINE, Ill., April 6.—The Velle Motors Corp. has put into operation its new engine plant at Marion, Ind., which has a floor space of 250,000 square feet. All the assembly work is done at Marion, the engines being shipped to the main factory here for installation in the cars.

HUDSON PRICES ADVANCE

DETROIT, April 6.—The Hudson Motor Car Co. has announced an increase of \$75 in their price of all its models with the exception of the new 7-passenger sedan recently announced at \$2145, which remains unchanged.

The advanced prices are effective immediately. The following shows the old and new lists:

| | Old | New |
|-----------------------------|--------|--------|
| 4-passenger speedster | \$1350 | \$1425 |
| 7-passenger phaeton | 1425 | 1500 |
| 5-passenger coach | 1475 | 1550 |
| 7-passenger sedan | 2145 | 2145 |

COUNCIL CHAPTER ASSURED

CINCINNATI, Ohio, April 6.—The organization of a Cincinnati Chapter of the National Safety Council was assured by the unanimous vote of more than one hundred business men at a meeting at the Chamber of Commerce. The vote for organization carried with it the assurance of financial support. Harry T. Gardner, manager of the Cincinnati Automobile Dealers' Association, announced at the meeting that the directors of the association had voted to pledge \$1,000 to the fund for the establishment of the Safety Council while the Cincinnati Automobile Club also contributed \$500 with the understanding that there would probably be another \$500 forthcoming later.

TO ACT ON MERGER

WASHINGTON, March 31.—A meeting of clubs affiliated with the National Motorists Association has been called for April 11 in Chicago for the purpose of approving the merger with the American Automobile Association. The A. A. A. will hold a similar ratification meeting two or three weeks later. It is not expected that the merger plan will meet with any decided opposition and it is felt that the deal will be approved by both sides.

Interesting Findings Developed in Study of Ten-Year Period

Tendency Toward More Equal Export Distribution Seen in Countries Covered by Report

WASHINGTON, April 6.—Of the ten leading foreign markets for American cars and trucks the smallest, in 1923, imported more than 4000 of our passenger cars, it was announced here by the Automotive Division, United States Department of Commerce, which has just concluded a study of the ten leading markets extending over the last ten years. Report is made that the survey indicates that the exports are steadily being distributed more equally to these countries. Further note is made that in 1923, all but two of the truck markets took more than 1,000 machines and total shipments exceeded even those of the boom year of 1920.

The increase of 1923 over 1920 in the case of passenger cars shipped to the ten countries was 24.2 per cent, and in trucks was 24.1 per cent. The figures were as follows, 1923: Passenger cars, 87,453; trucks, 18,887. 1920—Passenger cars, 70,414; trucks, 15,216.

Best National Customers

Australia, Canada and the United Kingdom have remained the best national customers for passenger cars made in the United States during the entire period 1913-1923. Fluctuations occurred in their individual positions, but the state stayed together at the top of the list. Mexico remained the most consistent purchaser throughout the ten-year period, showing a steady and unbroken increase with no trace of the 1921 depression which affected adversely almost all other markets. Argentina, although suffering from the 1921 slump, revived rapidly and gained sixth place in 1923, with purchases close to 7,000 cars.

Quick Recoveries

Among other markets which recovered quickly from the unfavorable conditions of 1921 were Sweden, Spain and Belgium, all of which established new records in 1923. On the other hand, British South Africa had not regained its former position by the end of last year, its purchases in 1923 being 1800 less than in 1920.

In all the export statistics, the most notable change in position was that of Japan, which took 21 American trucks in 1913 and 5111 in 1923. Large as the latter figure was, it still was slightly under the record for truck shipments to a single country, established in 1920 by the United Kingdom, with purchases of 5202. Another noteworthy development has been the rapid growth of exports to Belgium.

G. M. C. Reports Sales by Makes

NEW YORK, April 6.—The General Motors Corp. reports the sales by makes of cars for the year ended December 31, 1923, compared with the sales of the preceding year, as follows:

| | 1923 | 1922 |
|--|---------|---------|
| Passenger Cars | | |
| Buick | 218,286 | 138,501 |
| Cadillac | 22,201 | 22,201 |
| Chevrolet | 464,800 | 240,390 |
| Oakland | 35,974 | 20,853 |
| Oldsmobile | 33,356 | 21,216 |
| Commercial Cars | | |
| Chevrolet | 15,326 | 2,932 |
| GMC Trucks | 6,968 | 5,277 |
| Oldsmobile | 1,497 | 1,218 |
| Totals | | |
| Passenger Cars | 774,617 | 442,981 |
| Commercial Cars | 23,791 | 9,427 |
| Miscellaneous, including tractors and cars and trucks not now manufactured | 147 | 4,355 |
| Grand Total | 798,555 | 456,763 |

Fear Act Will Cause Delay in Motor Industry Exportations

No Benefit to Automotive Business Through New Law, Leaders of Trade Contend

WASHINGTON, April 6.—Lower freight rates for American-made goods, exported in American ships, as provided for in the Merchant Marine Act of 1920 and which goes into effect on May 20, of this year, will not benefit the automobile exporting industry, but on the contrary, the enforcement of the act will, it is believed, curtail the speedy shipments of automobiles intended for export.

This fear that the enforcement of the act might hamper the automobile industry was expressed this week in a series of conferences by representatives of automobile manufacturers, exporters and representatives of the National Automobile Chamber of Commerce, meeting with officials of the United States Shipping Board and the Emergency Fleet Corporation.

Purpose of Act

The act, as passed, was intended by Congress to encourage the use of American ships in export trade, by offering as an inducement a rate which would be less than the domestic freight rate from a manufacturer's plant to the seaboard, provided that manufacturer used an American ship in moving his goods.

Because of the fact that the automobile industry already has secured a freight rate from factories to seaboard, which is less than the domestic rate, the enforcement of the act would mean that in order to secure the rate they already enjoy, all automobiles intended for export would have to move in American ships. Without the Merchant Marine Act, at the present time, automobile exporters already secure the same rate and are at liberty to use either American or foreign vessels.

Makes for Delay

Under the provision of the act, he would have to wait until he can obtain space on an American vessel, or else he could use a foreign ship, but must pay the domestic freight rail rates, which in the majority of cases is approximately 33 1/3 per cent higher than the present automotive-seaboard export rate.

There is no disposition on the part of the automobile industry to use foreign vessels in preference to American ships, J. S. Marvin, manager of the Traffic Department of the N. A. C. C., acting as spokesman, pointed out to the Shipping Board.

The main purpose of the representatives of the automobile industry meeting at this time with the board, Mr. Marvin declared, was not to protest against the provisions of section 28 of the act, but rather to secure all data possible as to the facilities the board would have in the rapid transit of automobile export shipments.

FINLAND LIKES BUS

WASHINGTON, April 6.—An increase in the automobile trade of Finland for the present year, including a growing demand for motor omnibuses, is predicted by Trade Commissioner C. J. Mayer, located at Riga, Latvia, in a cable to the United States Bureau of Foreign and Domestic Commerce. The development this year, he predicts, will be even more than it was last year. The figures show that imports for motor cars during 1923, was 1309, as against 360 in 1922. Motorcycle imports in 1923 were 1708, against 354 in 1922.

Say Decision Only Applies To Law in District of Columbia

CHICAGO, April 6.—A letter to Motor Age from the Commercial Credit Co., of Baltimore, stresses the fact that the recent decision of the United States Court of Appeals in Washington, D. C., in the case of the Commercial Credit Co. against Barrett's Garage and James E. Woodhouse was of importance only to the District of Columbia. The Commercial Credit Co. takes exception to a sentence in the Washington article saying that the decision in the case was of national importance. The appeals court, in this case, held that a garage man's bills for labor and materials in repairing a car take priority over a conditional bill of sale on the machine. Although the final decision was handed down by the United States Court of Appeals, the Commercial Credit Co. points out that the decision is based on a District of Columbia statute and hence applicable only to the district.

BIG OUTPUT FOR QUARTER

LANSING, Mich., April 6.—For the first quarter of 1924, Oldsmobile sales totaled 22,000 cars as compared with 7635 in the same period last year. The highest first quarterly figure previous to this year was during the first three months of 1920 when 12,000 cars were manufactured and sold. Since the first of the year the plant has been operating day and night shifts.

PRODUCE FOOT DIMMER

COLUMBUS, Ohio, April 6.—The Kur-Tee-Gee Switch Manufacturing Co. has been organized here for the manufacture of a dimming device for passenger cars. The dimming device is operated by a foot pedal which eliminates the necessity of taking the hands off the steering gear. The office is located at 165 1/2 North High street.

\$25,000 FIRE DAMAGE

DETROIT, March 31.—Fire and explosion in the vault of Packard Motor Car Co. caused property damage estimated at \$25,000, but other than interfering with the routine of the treasurer's office had no effect upon the regular operation of the factory.

Believe Clarification at U. S. Capital Would Aid Business

Motor and Accessory Manufacturers' Directors Blames Adverse Conditions Upon Failure of Congress

NEW YORK, April 6.—Going on record as believing that the general business of the country is being adversely affected by failure of congress to pass constructive legislation and declaring that clarifying of the situation at Washington undoubtedly will have a beneficial effect upon general business conditions, in spite of an impending presidential year, directors of the Motor and Accessory Manufacturers at their monthly meeting last week, are well satisfied with present conditions in the automotive field.

President G. Brewer Griffin, following the meeting, issued his customary statement as to conditions and outlook, in which he points out that car builders and parts makers are both enjoying business as good or better than last year for the like period and that the caution now being displayed is praiseworthy rather than alarming.

Business Conditions

After discussing general business conditions and declaring that "purchasing seems unduly sensitive to weather conditions," President Griffin says:

"There is some falling off in orders and commitments in the automotive accessory field but so far this year the business as a whole is as good or better than last year for a like period. A let-up perhaps should not have been unexpected as a condition exists today where the rush of spring demand for motor vehicles has been largely anticipated and provided for by many of the larger producers. Stocks of vehicles of many makes are on hand to care for prompt deliveries to the user, avoiding the delayed conditions of other years.

Need for Balance

"We believe a reasonable balance between optimism and conservatism should be maintained. Safeguards should be thrown about any tendency to accumulate a stock of materials or finished parts beyond reasonably firm orders. Inventories should be held down to a close working minimum, with the most rapid possible turnover from raw materials to shipment of finished goods, and a constant study of productive costs to the point of maximum efficiency.

The sale of vehicles will undoubtedly be large in the late spring months and probably within thirty days the duration of the present breathing spell can be measured more accurately.

"It is the spirit of the industry to attempt each year to break the record of the previous year by a wide margin, and generally, such attempts have been successful. The industry has had its wagon hitched to a star; good judgment will not select a comet instead."

Used Car Holds Stage at Galesburg

Trade-In Bugaboo Discussed At I. A. T. A.'s Yearly Meeting

Delegates Hear Appleby's Views on Problem, Meet New Secretary and Pass Busy Day

GALESBURG, Ill., April 1.—The used car problem dominated discussions at the fifth annual convention of the Illinois Automotive Trade Association here yesterday. Throughout the program the used car held almost complete monopolistic sway, featuring speeches, round-table discussions and informal conversations.

It was easy to see that the delegates were vitally interested in any suggestion that might possibly lead to the annihilation of the used car jinx. They were there to learn and be shown if anyone had a solution to offer which from their standpoints would go through the acid test. In the beginning it was made clear from the rostrum that the Illinois association is not committed to any particular used car remedy, the attitude of the organization, rather, being one of open-mindedness and the desire of its executives being to convey to the members any new offerings of intelligence on the subject.

With sincere welcome it was, therefore, that James E. Appleby, of Detroit, father of the so-called Appleby plan, was received as one of the principal speakers. Whatever some of the delegates might have thought of the Appleby plan it must be admitted that its author made an excellent impression at the Galesburg meeting as a clear and direct analyst, one who has a confident grip on his subject and who enjoys the full sincerity of the man honestly and conscientiously self-sold on a theory.

As to Appleby Himself

Commendations along this line were heard from even the more outspoken opponents of the cure he recommends. Personally, in other words, the I. A. T. A. crowd liked this fellow Appleby, liked the way he delivered his stuff even if a greater or smaller number of them do doubt the logic of his scheme.

But little was said about the Appleby plan, itself, in the Detroit speaker's formal address. Only now and then did he make reference to it, taking it for granted, no doubt correctly; that all the delegates were familiar with the mechanism of the Appleby plan and discussing the used car situation generally, it might be said, in relation to the Appleby plan. In private conversation, however, when asked to shed further light upon the plan, itself, he was always accommodating. Mr. Appleby came to Galesburg to talk and they kept him at it, which again shows that regardless of what the Illi-

Officers Elected

President—C. R. Constant, Springfield, succeeding P. J. Killeen, Galesburg.

First Vice-President—W. E. Butler, Chicago, succeeding R. C. Cook, Chicago.

Second Vice-President—George Kelsall, Joliet, succeeding Morris Adler, Quincy.

Third Vice-President—F. A. Sperry, Bushnell, succeeding George Kelsall, Joliet.

Fourth Vice-President—John S. Goebel, Mendota, succeeding C. R. Constant, Springfield.

Treasurer—W. W. Ingram, Peoria, succeeding H. B. Pinkerton, Peoria.

Directors (3 years)—R. C. Schell, Beardstown; H. A. Halbert, Chicago; J. R. Histed, Chicago; Glen Tracy, Kewanee (Histed succeeds Ward S. Perry, Chicago, and Tracy succeeds Joseph Thompson, Kewanee).

Director (1 year)—H. A. Amerman, Urbana, succeeding H. F. Horstman, Alton.

nois dealers think of the motomart idea aid its future promises they were deeply interested in obtaining all the first-hand information on the question that they could get.

The Large City Enigma

Mr. Appleby admitted in response to a question that it will likely be a long time before his used car plan will be a practical agency in large centers of trade, such as Chicago and New York, thereby inferentially conceding that its field for an indefinite period will be confined to less populous cities. At present Grand Rapids is the largest city in which the plan is functioning.

That it will be ripe for the larger cities, or to phrase the thought better, that the larger cities eventually will be ripe for the Appleby plan, he did not hesitate to predict, asserting that the larger places with more complicated problems and more antagonistic elements will have to wait upon the processes of development and education. But in time he assured the delegates that the motomart will become an established and indispensable institution in even the leading municipalities.

His general comments upon the used car problem and the automobile industry's other related angles were interesting, being put over in a delightfully slashy fashion, served with a garnishment of snappy epigram and carrying no overhead whatever of lost time. He talks rapidly, this man Appleby, and each sentence is a separate thrust.

Good Principles Abandoned

Addressing himself to the dealer trade he said, among other things:

"You have departed from good merchandising principles and you have paid the price. Dealers of this day have been playing the part of hermits and think they are modern Houdins. They have forgotten that business is business. Business is a real thing, a thing that admits of no sentiment. It is utterly foolish to eliminate any part of business that promotes profit, and the used car business can be employed for profit. You'll never lick the used car problem until you establish the confidence of the used car buyer and give him his money's worth while at the same time removing the element of competitive bidding."

The dealer will be under a menace, Mr. Appleby said, as long as the factories continue to compete for the greatest production. "Either the factories must take the loss of overproduction," he declared, "or the dealers. And when you take the used car out of the problem," he went on, "you will cut your overhead three to one."

"Train your salesmen to be buyers rather than salesmen if you are going to go ahead in the used car business. You cannot successfully combine salesmanship and buymanship in one person. But you will never lick the competitive buying plan by the methods which most of you are trying now."

The convention was opened at 9:30 o'clock in the morning, the address of welcome for the city of Galesburg being made by Ross J. McClure of the local Chamber of Commerce, and the welcome in behalf of the Galesburg dealers being made by W. H. Callendar, president of the Galesburg Automotive Dealers Association. Thomas J. Hay, Chicago, made the response in behalf of the delegates. Everything moved swiftly from the beginning to the finish.

New Secretary-Manager

One of the outstanding features of the morning was the report of C. W. Coons, secretary-manager of the I. A. T. A. The report was doubly interesting because it was the organization's introduction to a new and very important executive, Mr. Coons only recently being engaged to fill the place formerly held by F. C. Zillman. The report dealt with the future rather than the past and held out a promise of activity on the part of the managerial offices in Peoria.

The feature address of the morning was delivered by C. E. Gambill, Chicago, on "Five Per Cent Net." This was another pithy, business man's lecture. Mr. Gambill insists that the dealer is entitled to a 5 per cent net profit and that he can get it under the proper conditions. He stressed especially two needs, contributing to this result, first buying properly and next a good sales organization 365 days a year. The salesman,

(Continued on next page)

Jordan's ABC Report Shows Company in Excellent Health

Digest Shows Assets at Time of Writing Were \$3,373,703, Debts \$271,264

CLEVELAND, April 6.—From the pen of E. S. Jordan, president of the Jordan Motor Car Co., comes what he calls "the ABC of Jordan's Financial Position," a digest of which shows that on the day it was written the company had assets valued at \$3,373,703 and owed but \$271,674.

After telling of the formation of the company eight years ago, on an investment of \$300,000, since which time each of the original investors, if he retained his holdings, has received an 80 per cent return in cash dividends, while his stock has increased 334 per cent in value. Mr. Jordan states:

"Just the other day the Jordan company had \$1,056,087.80 cash in the bank. On that day the Jordan company owed to people who sell us our materials, just \$271,674.97. On the same day the dealers who buy Jordan cars owed the company \$446,956.74 for cars which were on the road from the factory to the dealers' places of business. On the same day the company had \$1,023,749.27 worth of material being used in daily production of Jordan cars, and these materials were all paid for, with the exception of \$271,674.97, the figure above mentioned.

On that day the land, buildings, machinery and equipment of the Jordan company appeared on the statement at a valuation of \$846,909.50, all paid for. That figure represents the original cost of the buildings and the machinery with deductions covering depreciation. This in spite of the fact that the land upon which the Jordan plant was built was purchased at \$5000 an acre and has been appraised at \$35,000 an acre.

Take your pencil and paper and add up the assets covered by the preceding figures and you get a total for that day of \$3,373,703.31. On the same day the Jordan company owed just \$271,674.97.

The Jordan company does not owe a dollar to any bank, has no bonded indebtedness, no mortgages and no bank obligations aside from the current bills due to purveyors who are shipping us materials day by day.

SPECIAL TOURING SERVICE

COLUMBUS, Ohio, April 6.—Announcement was made recently by A. C. Rodrian, manager of the Columbus Automobile Club, that a special service would be maintained this summer for members expecting to go abroad. The club will attend to obtaining the necessary passports as well as arranging for shipment of the automobiles from the port of departure to whatever port is chosen for the landing abroad.

Used Car Holds Stage at Galesburg

(Continued from preceding page)

he said, must be a good seller of new cars and a good buyer of old cars and he thinks a good enough demand for the used cars will be found at the right price. Among his numerous practical suggestions besides a flat rate and cash basis for the service department, was to display the used car in an attractive showroom, rather than in the side alley or a back ware room. In Mr. Gambill's opinion the automobile dealer often overlooks the fact that the used car buyer takes just as much pride in the purchase as the new car buyer and will respond just as readily to the right sort of dealing. In summing up, he urged that the used car be given more time and close study, reminding the dealers that the factory limits its sales assistance to the new car and that the way to the used car sale must be blazed by the dealer himself without outside assistance.

Charles E. Watkins Head

There was much of fine pathos, philosophy, moral and hard sense in the address in the afternoon by Charles E. Watkins, Muncie, Ind., head of the personnel department of the General Motors Corp. He spoke from the standpoint largely of the manufacturer. On the question of efficiency in organization Mr. Watkins cried down the type of department head who does his job so wickedly well, so to speak, that the department could not get along without him. Efficiency along this line from his viewpoint, in other words, is more likely to be found in the department chief who trains those under him to such a high point of competency that the department could run itself at any time. Honesty with the public and with particular reference to the buyer came in for considerable attention at Mr. Watkins' hands. Ninety per cent of success or failure, he said, depends on the dealer's comprehension of the human element. His advice to the dealer is to be in the thick of all good things in his community and establish the confidence and friendship of the people. "Your car," he told the dealer, "in your community is what the manufacturer makes it, plus the personality you put in it."

Resolutions Adopted

Resolutions adopted by the convention included the following sections:

"Resolved, That this convention go on record in asking the Illinois senators to use their best influence toward maintaining in the senate the war excise tax as provided in the house bill and that the truck tax be arranged so that it would give \$1,000 exemption on all trucks irrespective of price. Further, that the purport of this resolution be sent to the Illinois senators by night letter and that representatives in congress be notified by mail of this action.

"Resolved, That the Illinois Automotive Trade Association go on record and cooperate with other state automotive organizations and the National Automobile Dealers Association in a movement inviting the manufacturers of automobiles to incorporate in their contract a clause on permitting the exchange of unsalable or obsolete parts.

"That the Illinois Automotive Trade Association go on record as favoring the \$100,000,000 bond issue to be voted on at the election in November, as in order to carry this bond issue it must receive a majority of the total votes cast in this election.

"Resolved, That this convention go on record as being against promiscuous solicitation of automotive dealers to join various so-called service and motorists organizations, and that our members decline to participate in any of the above without first obtaining information as to their worthiness from the headquarters of the state association."

Twin Cities Get Next Meeting

The 1925 convention goes to Champaign and Urbana, central Illinois "twin cities."

Nothing had been left undone by the Galesburg dealers to provide fun and diversion. It was a large undertaking for a city of that size to attempt an entertainment on the scale upon which this one was executed, but the Galesburg committee got away with it in notably fine fashion. The big frolic feature of the evening was a banquet, while one of the fun-makers was Dick Bradley, Peoria's noted story-teller, who was engaged to generate laughs both afternoon and evening.

GEAR MAKERS TO MEET

NEW YORK, April 6.—The eighth annual meeting of the American Gear Manufacturers Association will be held April 28-30 at the Lafayette Hotel, Buffalo. Among the speakers will be J. C. McQuiston, manager of the publicity department of the Westinghouse Electric & Manufacturing Co., who will talk on "Advertising as an Investment to the Gear Manufacturer."

VIRGINIANS LIKE SLOGAN

RICHMOND, Va., April 6.—"Offer \$100 Less," a slogan on used car trades, proposed by the N. A. D. A. as part of its 1924 merchandising program, seemed to strike a popular fancy in Richmond. It was a part of the talk by Lynn M. Shaw, assistant general manager of N. A. D. A., before a noonday meeting of the Richmond dealers, a feature of the show week program.

No Fords Stored Abroad For Opening of German Market

Ridicule Report Many Low-Priced American Cars Are Held in Foreign Warehouses

DETROIT, April 6.—Reports that a quantity of low-priced American cars, inferentially Fords, are awaiting the lifting of embargoes to be placed on the German market are ridiculed by the Ford Motor Co. offices here. The company has no cars in storage anywhere, least of all in Europe, and it declares that it seems impossible that any American company should have cars stored awaiting opening of the German market as this may not be for many months and money invested in either assembled cars or parts would thus be tied up for that time.

That part of the cable which specifies unassembled cars, would automatically eliminate the Ford company, officials say, as it has no arrangement for assembly of cars in Germany nor has any other American manufacturer that it knows of.

When the German treaty is made, the company says, it is prepared to ship cars into Germany, but these will be assembled cars from either the Antwerp or Copenhagen plants, both of which are situated close to the German border. Cars from either of these plants may be shipped or driven in.

The company is doing a considerable business in the German occupied zone in which it has established a number of dealers.

There are no dealers in the unoccupied territory but the company has had representatives in that country for a considerable period making arrangements for the opening of that territory when the treaty is signed. Reports from these representatives are that German car manufacturers look with favor upon the advent of American low-priced cars as a means to opening up the country and encouraging demand for cars generally.

That cars are to be sold upon installment plans is a matter of financial arrangement within the country by dealers. The factory declares Ford cars are being sold in many countries under installment plans similar to that in the United States, but that is through arrangements made by dealers and banking interests. The company itself has no part in the financing of such sales, it emphasizes, nor does it sell to dealers anywhere on installment plans. Undoubtedly cars will be sold on part payment plans in Germany when the market is open, the company declares, but that will be purely a matter of arrangement within the country.

DATES SELECTED FOR SHOW

DES MOINES, April 6.—The Des Moines Automobile Dealers' Association has decided to hold the 1925 Des Moines automobile show during the week of February 22, according to C. G. Van Vliet, secretary.

Italian Automotive Trade in Novel Conquest to Land Business of South American Purchasers

WASHINGTON, April 6.—A conquest of South American automotive trade is to be made by the automobile industry of Italy which is sending to that country a large exhibit of various makes of automobiles, accessories, etc.

The exhibit, says a report just received by the automotive division of the U. S. Department of Commerce, is a part of the Italian Floating Fair, which sailed from Spezia, Italy, on February 27, for a cruise to cover 23,000 miles, making a complete circumnavigation of South America and visiting important ports.

The plan is simple, and one which was discussed some years ago by the United States Chamber of Commerce, to have a big ship filled up with exhibits of various industries. The American idea, as is the Italian plan, was to offer actual goods and form contact with dealers and importers, securing at the same time first hand information as to their dealer's credit rating, etc.

The cruise of the Italian "Floating Fair" is intended to be largely commercial, but at the same time an active propaganda in behalf of Italy and the Italians' goods will be disseminated. The liner was donated by the Italian Government, is manned with naval officers and crew, whose subsistence will be paid by the Italian Ministry of Marine.

The exhibits cover the whole range of Italian manufacturers, the automotive exhibit being the largest. Each exhibit has a representative to display the wares and take orders. The expenses of the voyage are to be divided among the participants, being estimated at about 15,000 lire per unit of space, and the passage for the entire cruise of 25,000 lire per person.

HEADS NORTHWAY MOTORS

NATICK, Mass., March 14.—More than 600 stockholders attended the annual meeting of the Northway Motors Corp. and its affiliated companies which approved the new directorate, following which the board named Proctor W. Hansl as president of all the Northway companies, C. W. Blackman vice-president and Robert Bursner treasurer.

The stockholders were informed that practically the entire indebtedness of the Northway companies has been liquidated by means of funds provided under the merger plan recently submitted to stockholders and that operating expenses had been materially reduced.

President Hansl stated that less than 40 per cent of the stockholders would fail to take advantage of their rights under the consolidation plan. A consolidated financial statement of the Northway companies, which was submitted, showed net physical assets amounting to \$1,366,587 in excess of liabilities.

EACH TO ISSUE OWN TABLE

NEW YORK, April 6.—At a meeting of the Executive Committee Tire Manufacturers' Division, Rubber Association of America, held here recently, it was decided that no table of inflation pressures for balloon tires will be issued by the association. Each manufacturer will be expected to prepare his own table based on the deflection of the tire for the particular load it carries. The recommended deflection probably will be 22 per cent. This action is understood to have become necessary because one of the large tire manufacturers favors a six-ply tire which requires a higher inflation pressure than the four-ply balloons which most other tire makers are marketing.

It has been tacitly agreed that a 90-day limit will be placed on the standard guarantee for balloon tires, but details of this plan are not yet settled and the plan is subject to approval by all members of the Tire Manufacturers' Division.

Massachusetts Is Once More in Motor War With Border State

BOSTON, April 6.—Once more a border war has broken out in New England regarding motor vehicles. Motor Vehicle Registrar Frank A. Goodwin served notice upon John F. Griffen, commissioner of motor vehicles for New Hampshire, that the Massachusetts police officials and the Bay State motor inspectors have been notified to hold up cars and trucks coming from New Hampshire into Massachusetts and make them register here.

Mr. Goodwin had received complaints that New Hampshire authorities were disregarding the 20 days allowance in the law for trucks from other States, and had made Massachusetts trucks register after a few days in that State. Therefore, he wrote Commissioner Griffen, saying:

"If the authorities of your State persist in making Massachusetts trucks register before they are in your State 20 days then you must expect that the police officials of Massachusetts will retaliate. I realize that you cannot control this situation, therefore I have decided to do a little enforcing of law of my own down here against New Hampshire people, which will probably bring the matter to an issue."

This is the second time Massachusetts has been in a border war, the last time against Maine, which proved more disastrous for the latter State than for the Bay State.

35,000 SALES IN 1923

LANSING, Mich., April 6.—In the year ended December 31, 1923, the Olds Motor Works sold approximately 35,000 motor vehicles. This total aggregates about \$380,000 in retail value.

The freight bills which the Olds Motor Works paid the railroad during 1923 for incoming materials alone amounted to approximately \$428,000.

American Interests Blamed For Low Ebb Rubber Prices

**Charge of Co-operative Buying by
Leading Consumers on This Side
of Ocean Denied**

NEW YORK, April 1.—Crude rubber prices are at low ebb now, according to a copyrighted cablegram from London to the New York Times, because of alleged combinations of American consumers formed for the purpose of co-operative buying and because of the recommendation made by Secretary of Commerce Hoover that the Webb-Pomerene act be extended to permit consumers to set up common purchasing agencies for imported raw materials. It also is asserted that the growers are considering adoption of co-operative selling by plantation companies.

Denial is made, however, by prominent consumers on this side of the Atlantic that co-operative buying has been resorted to as yet, although it is said that this probably will come about if congress approved Secretary Hoover's suggestion.

"Rubber prices are low right now because the American industry is not buying at the present time," says a rubber man just back from Akron. "My trip to the tire capital told me the story. Tire manufacturers are not buying because they are using the stock they have on hand, purchased at low figures. If car production is cut, you may expect even less buying of crude rubber.

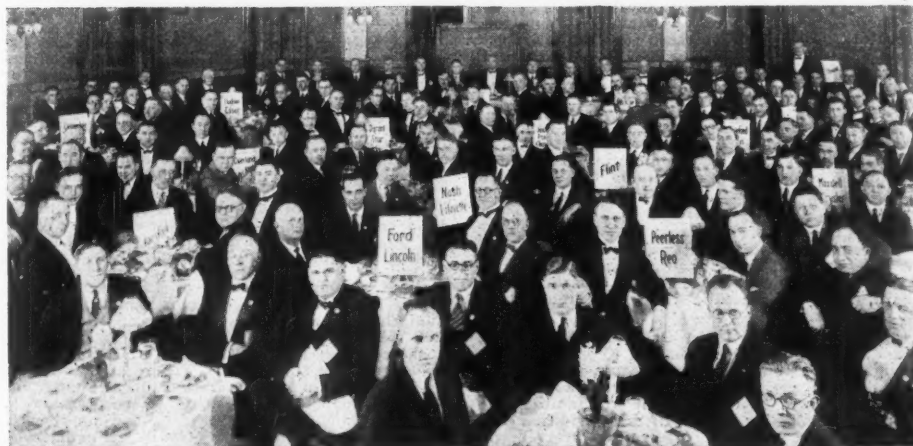
"As yet we have not got around to co-operative buying, but I think we will if the Webb-Pomerene act legalizes such action. Undoubtedly a big buying association will be formed, each of the large consumers being representation on the purchasing board, and this association will be in a position to buy for the entire industry on this side of the ocean.

"I am not looking for the growers to retaliate by forming selling syndicates because I believe it would be impossible to control the situation. I doubt if the Netherlands and Ceylon would go into such a deal and I am certain it would be impossible for such a syndicate to control the natives."

FORD ATLANTA CHANGES

ATLANTA, Ga., April 6.—I. B. Groves is to succeed W. W. Mitchell as manager of the Atlanta branch of the Ford Motor Co., Mr. Mitchell having been recently transferred to the Detroit office as manager of the advertising department. Mr. Groves has been with the Ford company the past ten years, manager of the Los Angeles branch the past five years. A meeting of the 200 dealers in the Atlanta territory was held at the Ansley Hotel in Atlanta a short time back to welcome Groves. It was also announced that O. P. Lucas, in charge of the Lincoln sales department at the Atlanta branch, has been transferred to Detroit as head of the Lincoln sales for the home office.

They Sat In On Big To-Do At Niagara Falls



It was a mean trick of the photographer—catching them before they were through eating—but he did and here they are wishing to goodness he'll make it snappy so they can resume the greater pleasure where they left off. Specifically this is a picture of the Niagara Falls Motor Trade Association at its annual dinner recently.

REPORTS ARE DENIED

AKRON, O., April 6—Official denial is made at the Goodyear Tire and Rubber Co. of the report that the company intends in the near future to call another \$5,000,000 worth of the prior preferred stock which was issued in the amount of approximately \$30,000,000 and of which \$15,000,000 has already been called in. The company officially states that the report which was current in Akron and New York regarding further redemption is without foundation.

The company also denied during the week that it contemplated an amalgamation with the American Automobile Fabric corporation as was reported in textile circles.

LAY PLANS FOR CAMPAIGN

ATLANTA, Ga., April 6—At the annual spring meeting of the allied automotive dealers of the Atlanta Automobile Association plans for the coming spring and summer merchandising program of the allied lines were discussed, with dealers optimistic that the present year in this district will be the best in history. Accessory and equipment sales the first two and a half months of the year have been approximately 20 to 25 per cent greater in Atlanta than last season during the same period, and a steady increase in sales has been noted since March 1.

"ORDER NOW" SLOGAN WINS

ROCKFORD, Ill., April 6—The Williamson Motor company March 15 reached a high record for a single day's business in the history of the company, delivering 23 cars. The Williamson company is Ford dealer here and has been carrying on an intensive "order your car now and avoid disappointment" campaign among its prospects.

Advises Cultivation, Rather Than Ruin of Used Car Future

DETROIT, April 6—Speaking to the Detroit Retail Sales Managers Association at a monthly meeting recently, Guy O. Simons, Michigan distributor of Willys-Overland, said the immediate job for dealers and sales managers everywhere is to start to sell used cars in such a way that each sale will create opportunity for two sales next year.

Used car business is stagnant today because prices are too high, said Mr. Simons and he declared that dealers will not begin to get buyers for their used cars until prices are right. "There are 3,500,000 used cars to be merchandised this year," said Mr. Simons, "and the entire 15,000,000 cars now in operation will be in our hands some day. It is time we were cultivating our used car future instead of ruining it."

Mr. Simons blamed the shortage of good salesmen in the retail field on the type of sales manager who is unable to instruct. The trouble is they try to drive and don't know how to lead.

U. S. ADOPTS STANDARDS

WASHINGTON, April 6—Standard specifications for motor gasoline, aviation gasoline, kerosene and other fuel oils and a considerable variety of lubricants, have at last officially been adopted by the United States government and beginning June 18, 1924, it becomes mandatory for all government departments and independent establishments of the Federal government to put into effect these standards.

The standards were worked out by Technical Committee on Lubricants and Liquid Fuels, in co-operation with the Society of Automotive Engineers, American Society of Mechanical Engineers, American Society of Testing Materials and the National Petroleum Marketers' Associations.

BUSINESS NOTES

The Damascus Steel Products corporation, Rockford, Ill., has increased its capital stock from \$75,000 to \$125,000 to handle an expansion program. Charles F. Naitland is president and C. P. Twomey, secretary. The firm manufactures machinery and tools.

The Heller Auto Sales Co., Cleveland, has been chartered with an authorized capital of \$15,000 to manufacture, buy and sell autos, trucks and tractors. Incorporators are Rufus Heller, M. A. McGrath, Frank G. Jaffa, Lillian Orloff and William T. O'Brien.

The Churchill-Clark Motor Co., Ravenna, O., has been incorporated with a capital of \$25,000 to buy, sell and deal in autos, parts and accessories. Incorporators are F. H. Clark, D. F. Clark, M. J. Churchill, R. L. Churchill, and A. L. Caris.

Sale of the Three-Level Garage of Springfield, Mass., by Robinson & Chaplin to H. G. MacDougal of Boston and others is announced. Additional frontage of 100 feet has been obtained and an addition will be erected that will increase the garage to a 650-car capacity. This addition will be of four stories, each entered by direct driveways, the acquisition of a site for an additional entrance lower than any of those now in use making this arrangement possible. So far as known, this will be the only four-level garage in New England operated without elevator service.

The Chevrolet Motor Co., of Atlanta, announces the recent formation at Woodland, Ga., of the Woodland Chevrolet Co., Inc., with a capital of \$5,000, to handle the Chevrolet line in that section. D. H. Starr, W. G. Miller and Sam Johnson are the incorporators.

The Zahner-Sipe Co., Alliance, O., has been chartered with an authorized capital of \$20,000 to buy, sell and deal in autos, parts and accessories. Incorporators are Ira J. Warner, Herbert D. Palmer, Marion Gray, Rose Froelich and Max D. Gustin.

The Fifth City Motor Sales Co., Cleveland, has been incorporated with a capital of \$25,000 to buy, sell and deal in new and used autos, parts and accessories. Incorporators are Jerome M. Friedlander, Jacob J. Fallman, George L. Dornier, John H. Kantrowe, and Mae McCarthy.

The McCullough-Kimmel Co., Youngstown, O., has been chartered with a capital of \$10,000 to buy, sell and deal in auto accessories, tires and operate a gasoline station. Incorporators are Jas. S. McCullough, Edgar J. McCullough, Kenon K. Kimmel, Eva L. Kimmel and John Schlarb.

Receivers of the Comet Automobile Company, Decatur, Ill., which since September 1922 has been in the hands of receivers in an unsuccessful effort to reorganize its finances, have been authorized by the court to sell the 20-acre site and buildings to the L. P. Halladay Company for \$125,000. The Halladay company, which manufactures bumpers and shock absorbers, anticipates that its production will be tripled through the occupation of this plant and the continuation of its present production resources.

Stockholders of Hayes Wheel Co. have approved the acquisition of Hayes Motor Truck Wheel Co., Albion Bolt Co. and the Morrison Metal Stamping Co., as proposed through the issuance of new Hayes Wheel Co. stock and its exchange for stock in the companies indicated.

The Firestone Tire and Rubber Company of Akron, O., is establishing a branch warehouse in St. Joseph, Mo., for agents in twelve counties in northwest Missouri and northeast Kansas. The company has announced that it will carry a \$40,000 stock.

The Arnhold Garage and Sales Company of Jefferson City, Mo., has purchased the building in which it is located, from its president, Hugo Arnhold, for \$20,000.

Articles of incorporation have been issued to the Hall Motor Car Company, Rockford, Ill., with a garage plant at 1011-15 Third avenue. Capital stock has been fixed at \$25,000. George D. Hall is president, and William A. Hall, secretary-treasurer. The company will distribute Ford cars. It is also proposed to handle trucks, tractors and motor vehicle accessories.

The Federal Pressed Steel Co. of Milwaukee, manufacturer of pressed, welded and seamless steel products, and automobile bumpers has consummated a deal with the Agate Auto Appliance, Inc., of this city whereby it will merchandise the Agate stop signal in connection with Federal bumpers through its jobbing division, 360 North Michigan boulevard, Chicago.

The Whitney Sales & Service Co., Cleveland, has been chartered with an authorized capital of \$10,000 to buy and sell autos and trucks. Incorporators are Perry D. Caldwell, L. L. Whitney, N. G. Greiger, W. B. Nye and E. D. Klee.

H. F. Moffitt and R. D. Blakesley have purchased the Auto Supply Co., 117-121 South Linn street, Rock Island, from the Western Specialty

Co., Ralph C. Pukett and J. H. Maggard.

The Mutual Wheel Co. of Moline, Ill., has received orders from the Firestone Steel Products Co., Akron, O., for manufacture of wheels for balloon tire use. The Akron factory has been forced to farm out its work and the Mutual Wheel plant has been pushed to capacity production to meet the additional contracts.

A Detroit dispatch says stockholders of the Hayes Wheel Co. have approved acquisition of the Hayes Motor Truck Wheel Co., Albion Bolt Co. and the Morrison Metal Stamping Co., as proposed through issuance of new Hayes Wheel Co. stock and its exchange for stock in the companies indicated.

A. H. Caward, purchaser of the equipment and repair parts of the Dort Motor Truck factory at Waterloo, Iowa, expressed hope that the plant will be enlarged and placed in operation within a short time. The Caward interests acquired the property at an auction sale. There are 150 trucks in operation in the Waterloo district and the repair industry is necessary to keep these in operation and save them from the junk yard. Commercial truck production will be undertaken later.

The Dains Nu-Matic Bumper Co. has leased a factory plant in Keokuk, Iowa, for the production of automobile bumpers and will take over the machine shop, nickel-plating plant and glass plating appliances to turn out its complete product here. Frank J. Dains, president of the company, is the inventor of the bumper and with him in the industry are: T. J. Spurgeon, Wayland, Iowa, vice president; Howard E. Spurgeon, Wayland, secretary-treasurer, and W. C. Carman, Waterloo, sales manager.

The Muzzy-Lyon Company and the Federal Bearing & Bushing Corp., both of Detroit, are the principals in a merger just consummated. The new corporation will be known as the Federal-Mogus Corp., the name being derived from the well known trade names under which their products have always been sold. Both concerns are well known in the automotive field. The Muzzy-Lyon Company has been organized for some thirty years.

An Akron letter says the Mason Tire and Rubber Co. reports that production of tires in its Kent and Bedford plants combined has reached approximately 4,500 a day which is about 75 per cent of capacity. The company is advertising for men for both plants in order to increase production further. The company's Bedford plant, the former Owen Tire and Rubber Co., was idle during a large portion of last year but was placed into production early this year. This plant is producing in the neighborhood of 1,500 of the total production of the company.

M. P. Simpson, William Elmes and F. H. Guppy, until recently connected with the Moltrup Steel Products Co. and formerly with the Standard Gauge Steel Co., both of Beaver Falls, Pa., have organized the Superior Steel Products Co., which will be located in Monaca, Pa. The company will manufacture cold finished steel in standard and special shapes, screw steel, shafting and polished rods; round, hexagon, flat and square cold drawn steel bars, finished steel plates and other products. It will be capitalized at \$100,000 and the officers will be: M. P. Simpson, president; Homer H. Swaney, treasurer, and F. H. Guppy, secretary.

The Smith-Whetman Motor Co. of Provo, Utah, has filed for application for a charter of incorporation showing a \$10,000 capital. Heber A. Smith is president and George E. Whetman, vice president and manager.

The Heim Grinder Co., recently organized, has acquired the entire interest of the Ball & Roller Bearing Co. in the Heim centerless grinder and will continue the manufacture of the device at the present plant in Danbury. The officers of the company are: Henry N. Flvnt, president; Clayton O. Smith, vice president; Ferris N. Angevin, secretary and treasurer.

The Preston Motors Corp., which was adjudicated bankrupt on March 10th, 1923, will be sold to the highest bidder at noon on April 8, at plant No. 1 on the Vanderbilt road near Birmingham. This announcement was made Tuesday after a meeting of the creditors in the courtroom of Judge E. B. Dryer, referee in bankruptcy.

The F. C. Dabney Co., 79 Walton street, Atlanta, jobbers of batteries and accessories, has formed a connection with the Grow Tire Sales Co., Atlanta branch, and established a department that will handle the Grow tire line at wholesale in the southeastern territory. W. A. Satterwhite, formerly manager of the Grow factory branch in Atlanta, assumes management of the new Dabney branch.

The Pogue-Chevrolet Company has been incorporated at Chillicothe, Mo., with a capital of \$25,000.

Regulation and Education Big Needs in Reducing Accidents

Olds President Declares Every Association and Member of Trade Should Join Movement

LANSING, Mich., March 29.—Proper regulation of traffic and the education of pedestrians are the two most needed requirements for the reduction of the number of traffic accidents, according to A. B. C. Hardy, president of Olds Motor Works and a member of the traffic and safety committee of the National Automobile Chamber of Commerce. He declared that every automobile association, dealer and owner should bring pressure on their city and state officials until progressive plans of traffic regulation and education were accomplished facts.

In the regulation of traffic Mr. Hardy advocates the following salient ideas:

National co-ordination of traffic laws so automobile drivers will be governed by but one set of rules.

Designating certain streets that have no street car traffic in large cities for automobile use.

Discouraging the driving of automobiles on principal city thoroughfares that carry heavy street car traffic. This can be done by eliminating right and left hand turns at each corner.

Detailing traffic policemen at all important intersections in the city, and at important state and county road crossings out of the cities on week-ends and holidays when traffic is heavy.

Strict enforcement of the old rule now almost forgotten that slow moving vehicles must keep to the right of the road. This to apply both in and outside cities.

The M. A. Flynn Motor Company, 3823 Broadway, Kansas City, Mo., has been incorporated with a capital of \$25,000 by M. A. Flynn, William A. Flynn and J. Frank Flynn.

The St. John's Garage and Auto Supply Company, 6153 Delmar, St. Louis, Mo., has been incorporated with a capital of \$15,000.

W. R. Cossaboom of Cossaboom's Garage, Springfield, Mass., is about to erect a large new service building, connected with his present establishment. This will be equipped with a full line of machinery required for a first-class automotive repair shop.

The Howard Automobile Company, distributors of Buicks in California, Oregon, Nevada and Arizona, has broken ground for a new building to cover a lot 146x200 feet on Webster and Twenty-eighth streets, Oakland, which, when completed, will be one of the finest motor car establishments in California. It will house the branch of the Howard organization on the mainland side of San Francisco Bay, and will have a floor space of 56,000 square feet, the second story having a frontage of 146 feet on Webster and a depth of 64 feet on Twenty-eighth.

The L. C. Ruffner Co., Toledo, has been chartered with an authorized capital of \$100,000 to buy and sell new and used autos and accessories and operate a general garage. Incorporators are Elwyn C. Davies, A. C. Ruhley, John W. Winn, Jr., George R. Effler and Donald F. Mehorn.

The Ace Garage, Toledo, has been chartered with a capital of 500 shares, no par value designated, to buy and sell new and used automobiles and accessories and do a general garage business. Incorporators are Leroy E. Struble, George E. Wise, Nolan Boggs, Ralph W. Doty and Hattie Ackerman.

Henderson Brothers, automotive parts distributors, have moved into a \$25,000 building of their own at 15th and K streets, Sacramento, Calif. The building is said to be one of the most complete of its kind in the state.

CONCERNING MEN YOU KNOW

W. D. Rockwell, says a Detroit news note, one of the well known sales figures in the industry, has been appointed director of sales of Parsons Mfg. Co., in which capacity he will proceed at once to the development of a national sales organization to merchandise the Parsons line of body equipment direct to the replacement trade. Mr. Rockwell was for three years director of sales at A. C. Spark Plug Co., and he was also director of sales of Universal Machine Co., Bowling Green, O., and for Adams Axle Co., Findlay, O.

Russell E. Gardner, Jr., president of The Gardner Motor Co., Inc., of St. Louis, sailed from New York on the Aquatania March 15 for a six weeks' tour of England and France. Mr. Gardner's first stop will be at London, where he intends to study England manufacturing practice, particularly as applied to 4-wheel brakes, balloon tires and body styles. From London he will go to Paris, where he will investigate the same subjects.

Announcement has recently been made of the appointment of R. S. Wiley as manager of Export for the Auburn Automobile Company. Mr. Wiley has been a member of the Auburn organization for a number of years and is ably qualified for the position to which he had been appointed.

T. E. Jerrard, general sales manager of Durant and Star cars from the Lansing zone, accompanied by H. T. Thompson, manager of parts and service and A. B. Clapp, district salesman at Memphis, made a visit to Nashville in March. He was very optimistic on the industry.

Mr. I. E. Loveland, service manager of the Remy Electric Company, Anderson, Ind., is now making an extensive business trip through the East. He is visiting all of the principal automotive distributing centers where the Remy Electric Company is represented by branches or Authorized Electrical Service Stations of United Motors Service, Inc., their field service organization.

Courtney Johnson has resigned as assistant general manager of Dort Motor Car Co. to join the Gardner Motor Co., Inc., the change in positions being made this week. Mr. Johnson has been connected with the Dort company for the past nine years, becoming assistant general manager about a year ago. His successor at the Dort plant has not been selected.

Zenas W. Carter, who has just completed the special bus promotion program of the White Motor Co., is now associated with the Erickson Co., New York advertising agency.

Fred Comer, master mechanic of the Durant team, will make his debut as a driver in the Indianapolis 500 mile race, having entered to pilot a Durant Special.

John J. Alleva, advertising and newspaper man, has been appointed manager of retail sales and advertising by Louis C. Block, Philadelphia distributor of the Gray car.

The appointment of Floyd Northcutt as retail sales manager for the firm of John Smith, Reo distributors of Atlanta, is announced. Northcutt formerly was with Smith when he handled the Buick for several years, then established a Buick agency of his own which he sold recently to D. C. Black. Northcutt is a former president of the local association.

C. B. Clark has been appointed Pacific Coast district manager of the automotive division of the Columbus McKinnon Chain Co. He will have charge of the sale of Dreadnaught tire chains and accessories in the western part of the United States from Billings, Mont., and El Paso, Texas, through to the western coast, with headquarters in San Francisco. Mr. Clark formerly was Pacific Coast sales manager for the Champion Spark Plug Co., of Toledo.

E. H. Janes, W. H. Wallace and D. R. Swinton will represent the bumper, spring and axle divisions of the Eaton Axle & Spring Co., with headquarters in the company's new offices in the General Motors building, Detroit.

AFTER LICENSE FAKERS

COLUMBUS, Ohio, April 6—The Columbus Automobile Club has started a drive against persons who give fictitious names, addresses and other untrue information in obtaining auto license plates, according to Arthur O. Rodrian, secretary of the club. The announcement came on the heels of word from Cleveland that 800 persons there are known to have given false information there in securing tags.

Secretary Rodrian estimates that fully

Howard J. Burnish, for the past six years chief engineer of the gas engine plant of the Worthington Pump & Machinery Corp. at the Cudahy works, has been transferred to the compressor engineering department of the company at Cincinnati.

C. H. Booth and F. M. Small, formerly of the Republic Rubber Co., and William B. Dunlap have been elected directors of the Lee Rubber & Tire Co.

Harvey C. Fruehauf has been elected president of the Trailer Manufacturers Association of America at a meeting of the association directors held at the Hotel Statler this week. The meeting also voted to undertake a campaign for an amendment to the revenue law now in the senate whereby trailers would be exempt from automobile excise taxes.

J. E. Simonds, formerly Chicago branch manager of the Duplex Engine Governor Co., of Brooklyn, has assumed charge of the Detroit branch, succeeding C. A. Anderson, resigned.

Adolph Saurer, Inc., of New York City, the American factory branch of the Saurer motor truck factories, has opened a sales and service branch in Chicago at 1115 West Washington boulevard. John H. Romann has been placed in charge.

N. J. O. Strider has been placed in charge of the new factory branch opened in Cleveland by the Locomobile Co. of America. It will be known as the Locomobile Co., and is located at 7501 Carnegie avenue.

Courtney Johnson has resigned as assistant general manager of the Dort Motor Co. to join the Gardner Motor Co., Inc. Mr. Johnson has been connected with the Dort company for nine years, becoming assistant general manager about a year ago. His successor at the Dort plant has not yet been selected.

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Major H. L. Burns, for several years associated with F. E. Maffett, Inc., Dodge Brothers distributor in Atlanta, as sales manager, has accepted a similar position with J. E. Duffell, Studebaker dealer in Atlanta.

Albert Estes has recently joined the Drebnen Motor Company in the capacity of manager of the Bessemer, Ala., branch of the company, selling Buicks and Cadillacs.

The St. Charles Automobile Association of St. Charles, Mo., gave a banquet in that city recently and among the speakers were Philip H. Brockman, president of the St. Louis police board and president of the DeLuxe Automobile Company, and John A. Schlecht, president of the Mound City Auto Company of St. Louis.

Max Gordon, 33 years old, agent for the Studebaker automobile at Chillicothe, Mo., and one of the best known business men in that city, died there recently after an operation for appendicitis.

C. E. Robinson, of Springfield, Mo., one of the first tire merchants in that city and regarded as one of the most expert vulcanizers in the United States, died suddenly in that city recently. He had been located in Springfield 13 years.

J. H. Newmark, for more than 15 years associated with Durant and General Motors interests, has established his own business under the name of J. H. Newmark, Inc., and will conduct a general advertising agency, continuing to direct Durant sales promotion activities and to create and place the advertising of Durant enterprises through his independent organization. The Newmark agency will be located in the Fisk building, New York City.

150 cars in Columbus have been registered on false information.

Various motives are assigned for this false practice. Some of the offenders are bootleggers, some wish to avoid consequences in case of accident, some want to get out of paying personal tax on their cars or other property and some have various criminal motives.

In checking over the 1923 returns, fully 3000 cars in Franklin county were not listed for taxation according to the county auditor.

Ford Dealers of Oakland Go After Used Car Bugaboo

Rigid Policy Adopted Through Which It Is Hoped Trade-in Losses Will Be Reduced

OAKLAND, Calif., April 6—The associated Ford dealers of the mainland side of San Francisco Bay, including all these dealers in five cities, have taken an important step toward co-operative solution of the used-car problem. All these dealers have adopted a rigid policy to bring the appearance, condition and utility of used Fords to a higher and uniform standard. They also have agreed on uniform quality of work, and a uniform schedule of prices on used Fords.

The new plan is to be known as the "Certified Used Ford Plan," and the cars sold under it are to be designated as "Certified Used Fords." Each such car will be accompanied, at the time of sale, by a standard form of certificate, showing that the car conforms to standards outlined on the certificate. The dealers further agree among themselves, and with the purchasers of these used Fords that any buyer has the right to return the car he bought to the dealer from whom he purchased it, within five days of sale, and to receive for it credit for the full amount paid on any other car, either new or used, in stock. Each car sold under this plan is thoroughly reconditioned, repainted, tested, checked over carefully, and its dependability insured to the purchaser. Uniformity of work and of costs of the work will be assured to all the dealers, while price cutting, car for car, will be eliminated.

New low prices probably will follow the plan, which is now in use. The certified plan applies only to 1920, 1921, 1922 and 1923 models. Models of 1919 and earlier are to be sold at similar reduced prices, and with minor adjustments, but will carry no certificate. The plan also will bring about some changes in the prices allowed for used Fords by these dealers, but the main clause for reduced resale prices lies in what amounts virtually to flat rate repairs and fixed schedules of costs.

URGES DEALER CAUTION

ST. LOUIS, Mo., April 6—A business forecast issued by C. A. Vane, manager of N. A. D. A. states that all indications point to a large volume of business in a majority of industries with the automobile industry leading by a large margin. However, there is a precautionary note sounded to the effect that the important thing is how you do this business. It cannot be done wildly and show a profit. It must be done safely. There is greater need right now for further reductions in allowance prices on used automobiles than ever before. The profit sheet for 1924 is going to reflect exactly the conditions that the dealer creates during April, May and June.

IN THE RETAIL FIELD

New foreign distributors for Auburn recently appointed are: Philippine Motors, Inc., Manila, P. I.; MacDonald & Co., Freiburg-Baden, Germany; Michael & Nordemann, Stockholm, Sweden; Trinidad Agencies, Port of Spain, Trinidad.

Moon Motor Car Co. of St. Louis announces that Anton Burnell, its distributor at Cologne, Germany, has ordered forty-two cars for immediate shipment. "This foreign business is significant in that it presages the improved economic conditions in Germany and the resumption of buying of American made automobiles," an official of the Moon Motor Car Co. states. "Our German distributor anticipates selling several hundred cars this year."

The Reno Motor Car Dealers Association has asked California to give the same recognition to Nevada dealers that Nevada extends to other states. California authorities are alleged to have refused to allow Nevada dealers to cross the state line and solicit business in California. Large sections of the mountainous part of California are tributary to Reno and other Nevada cities, and the local dealers feel that in as much as California dealers are allowed to solicit business here without restriction, California should extend the same right to them.

Samuel C. Porter, president of the Atlanta Automobile Association, and one of the best known automobile dealers in Atlanta, has formed the firm of Samuel C. Porter, Inc., and taken a Packard franchise for the Atlanta territory. Salesrooms have been established at 42 East North avenue, with Porter in active charge of the business. Porter was formerly general manager for some years for the J. W. Goldsmith, Jr., Grant Co., of Atlanta, Hudson and Essex distributors.

G. G. G. Peckham, Buick distributor here, entertained a party of Buick sales executives here last week. Among the guests were E. T. Strong, general sales manager of the Buick Motor Co., and these seven district managers: H. P. Carter, Chicago; B. H. King, Atlanta; J. F. Martin, Kansas City; J. D. Coss, Philadelphia; A. G. Bennett, Pittsburgh; J. A. Coy, Detroit, and J. A. Hart, Dallas.

J. L. Moutier, formerly of Peoria, Ill., who has been operating the Crown Auto Company at Eureka, Ill., for the past seven years, has decided to retire from business in Eureka and return to Peoria. He has disposed of his build-

ing to F. J. Darnell who will utilize it for other purposes.

The Bunker Bros. Motor Car Company has been organized at Kankakee, Ill., and will open a garage and sales agency at 334 South Schuyler avenue. Capital stock has been fixed at \$25,000. The promoters include P. J. Bunker and E. F. Bunker.

The Carlisle Motor Co. of Murray, Utah, is now in its own building, recently erected at State and 48th South Street. The company handles the Chevrolet car.

A. E. Olson and Paul Sanguinetti have been appointed Franklin distributors at Stockton, Calif. They have opened salesrooms at 26 North Wilson Way.

Grady Pogue has formed the Pogue-Chevrolet Company at Chillicothe, Mo., and will take over the Chevrolet agency in Livingston county.

Frank Carter has purchased the Buick automobile agency at Clinton, Mo., from Calvin Luallin.

Philip A. Williams, Jr., president of the Williams Motor Sales Co., Dodge dealer, Springfield, Mass., gave a luncheon recently in the Noyasset Club in that city to organization members of that company and its dealer agencies, on which occasion Mr. Williams gave a talk descriptive of a 10,000-mile trip through the West, dealing especially with points on the merchandising and servicing of cars on the Pacific Coast.

Announcement is made of the completion of the executive staff of the new Springfield (Mass.) branch of the White Truck Co. for the serving of Western Massachusetts and adjacent territories. A. C. White, Jr., for 11 years with the White organization and recently special agent in Worcester, has been appointed branch manager, with Leon E. Sheldon, assistant, in charge of city sales and Ralph W. Hooker in charge of the wholesale and outside retail field. Gilbert Day, for many years assistant to the service manager in district headquarters in Boston, has been made service manager, and Merrill Baker, formerly of the Boston office, has been placed in charge of the parts department.

A new branch agency is selling Jewett cars at Cleveland. It is the Fifth City Motor Sales Co., and it is located at 10318-20 Superior avenue. J. I. Follman is president; J. H. Kantrowe, vice president, and G. L. Dorner, secretary and treasurer, are the officers. All have had experience in merchandising cars.

OPEN CHICAGO BRANCH

CHICAGO, April 6—Adolph Saurer, Inc., of New York City, the American factory branch of Saurer motor truck factories, announces the opening of a sales and service branch in Chicago, at 1115-7 West Washington Boulevard. John H. Romann is manager in charge of the Chicago branch. The Chicago branch has on exhibition the new Saurer truck chassis, 6½-ton capacity, with direct single-reduction bevel-gear drive. Noteworthy features of the Saurer truck are the motor brake, the automatic lubrication, ball bearings throughout and the unique design of the drive and the frame. Complete part and service station is maintained at the above Chicago address.

MOON USES DUCO FINISH

ST. LOUIS, April 6—Moon Motor Car Co. has adopted the Duco system of body finishing and is using it on all models of their Series "A" cars, according to an announcement just made by Carl W. Burst, vice-president and works manager.

Moon is using what might be termed a "super-Duco" system of finishing their cars. After the cars are finished in the regular Duco way, Moon applies a coat of finishing varnish, producing a high lustre finish.

DORRIS BUILDING CARS

ST. LOUIS, Mo., April 6—While waiting for the outcome of pending litigation which will decide the future activities of the company, the Dorris Motor Car Co. has been going ahead with organization intact, building trucks, passenger cars, etc.

Recently the company sold a bus seating 22 paid passengers; the chassis was built by the Dorris company and the body by the coach department of the Anheuser-Busch Brewing Co.

Officials of the Dorris Co. refused to commit themselves when asked if this was the line of manufacture which they intended to follow after the reorganization of the company.

MANY WITNESS TESTS

ST. LOUIS, April 6—Large crowds witnessed the tests applied to the finish of Oakland cars at the Mississippi Valley Motor Co.'s show rooms here, designed to show that there is nothing which can harm the Oakland finish. Much surprise was manifested by the people when acids, hot tar, lime cement, lighted matches, etc., were applied to the car and when removed the finish showed that the substance had not hurt it.

State-Wide System of Club Garages Plan of Ohioans

Elaborate Chain of Emergency Road Service Stations for Motorists on Association's Program

COLUMBUS, Ohio, April 6—Organization of a state-wide system of rendering motorists emergency road service through official automobile club garages will be undertaken by the Ohio State Automobile Association, as the result of a decision reached at a special meeting of club secretaries. Eventually, according to Secretary Charles C. Janes of the O. S. A. A., the system will comprise several hundred official garages, giving service over thousands of miles of highway and operating in every section of Ohio through the state association 79 clubs.

The principal features of the service are:

1. The automobile club selects its official garages and puts them under bond and contract.
2. Club members may request a delivery of gasoline when they run out on the road; one-half hour of roadside repair work necessary to start stalled motor, tire change or repairs within a specified time limit; towing service in case of wreck or falling in ditch; check up on repair work done for club members in official garages in order to insure fair charges.
3. A nominal fee is charged for any of these services.

IMPORT DUTIES INCREASED

WASHINGTON, April 6—An average increase of approximately 10 per cent in the import duties of automobiles, trucks, parts and accessories, imported into Uruguay, became effective on January 28, the Tariff Division of the U. S. Department of Commerce has been advised by the Consul at Montevideo.

The new tariff law provides that this increase shall be in force for three years. The former duty on automobiles and trucks was levied on an ad valorem basis, but the new schedule provides for an official valuation which has been specifically set for each make and type of car, the general provision being an increase of about ten per cent in the custom's duties.

BEGIN QUANTITY PRODUCTION

WAUSAU, Wis., April 6—The newly organized Marathon Battery Co. of Wausau, Wis., commenced quantity production of storage batteries and dry cells on March 20. For two months work has been under way in remodeling and retooling the former plant of the American Products Co. on Grand avenue, Wausau, and considerable machinery of special design has been built in Wausau and nearby machine shops to meet the needs of original processes which the new Marathon company is employing in its production.

COMING MOTOR EVENTS

AUTOMOBILE SHOWS

| | | |
|------------------|------------------|---|
| Calumet, Mich. | April | Central Storage Co., Jos. A. Savini, Manager. |
| Chicago | Jan. 24-31, 1925 | National Automobile Chamber of Commerce. |
| Goldsboro, N. C. | April 21-26 | Chamber of Commerce, W. C. Denmark, Manager. |
| Green Bay, Wis. | Aug. 25-30 | Automotive Division, Association of Commerce, W. F. Kerwin, Manager. |
| Milwaukee, Wis. | Aug. 25-30 | Milwaukee Automotive Dealers' Association, Fall Show, Bart L. Ruddle, Manager. |
| Mitchell, S. D. | April 10-12 | At the Corn Palace, directed by P. M. Young; under auspices Mitchell Automobile Dealers Assn. |
| New York | Jan. 3-10, 1925 | National Automobile Chamber of Commerce. |
| Reno, Nev. | June 14-21 | Annual State Exposition under auspices of Reno Motor Car Dealers' Assn. |
| Sacramento, Cal. | Sept. 1-10 | State Agricultural Society, C. E. Paine, Manager. |

Toronto, Ont. Aug. 23-Sept. 6. Canadian Automotive Equipment Association and the Automotive Industries of Canada, Gib Robertson, Secretary.

FOREIGN SHOWS

London, Eng. Oct. 16-25

CONVENTIONS

Albuquerque, N. M. May 26-31 U. S. Good Roads Exhibition.

RACES

| | | |
|-----------------|----------|-----------------------------------|
| Altoona, Pa. | June 14 | A. A. A. 250-Mile Speedway Event. |
| Fresno, Cal. | April 24 | A. A. A. 150-Mile Speedway Event. |
| Frisco, Cal. | Oct. 4 | A. A. A. 150-Mile Speedway Event. |
| Indianapolis | May 30 | A. A. A. 500-Mile Speedway Event. |
| Kansas City | July 4 | A. A. A. 250-Mile Speedway Event. |
| Kansas City | Oct. 19 | A. A. A. 250-Mile Speedway Event. |
| Los Angeles | Nov. 24 | A. A. A. 250-Mile Speedway Event. |
| Syracuse, N. Y. | Sept. 1 | A. A. A. 100-Mile Speedway Event. |

More Than Half Million Used Cars on Hand Last of March

Stock About 25 Per Cent Heavier Than Same Time in 1923, Says Association

ST. LOUIS, April 6.—More than half a million used automobiles were in the hands of automobile dealers at the close of March, according to figures made public here by the National Automobile Dealers' Association. This is about 25 per cent more cars than were in the stocks of dealers at the close of the first quarter of 1923.

Prices on used automobiles, as reported by the dealers from 18 states, to the headquarters of the N. A. D. A. are steadily down grade. In the last three months of 1923 the used car selling prices were down to nearly \$300 and in the first three months they fell to an average of \$293.60.

The average allowance price for used cars in the first three months of 1924 was \$300.14.

The fact that the dealers generally were still making allowances in trading, that were higher than the prices at which the cars would resell, accounts for the continued heavy losses being absorbed by the dealers, says Lynn M. Shaw, assistant general manager of the N. A. D. A., who has just completed compiling the figures for the first quarter. The losses for the first quarter of the 1924 were \$6,049,600.

Lynn M. Shaw, assistant general manager of N. A. D. A., who compiled the figures on the used car situation for the first three months of this year, says that the steady increase in the amount of

California and Ohio Are First in Sale of Used Cars

ST. LOUIS, April 6.—California and Ohio led all states in the total sales of used automobiles in the first three months of 1924, says the National Automobile Dealers Association in bulletins put into circulation here. California and Ohio also reported the lowest percentage of dealers who had not made any sales in the same period.

In Wisconsin, 39.4 per cent of the dealers reporting on used car stocks, also reported that they had not made any sales of used cars in the first quarter. In Kentucky, 39.2 per cent of the dealers reported they had not sold any used cars. In Iowa, 21.1 per cent of the dealers reported no sales of used cars; Missouri, 21.2 per cent; Oregon, 10 per cent; Washington, 20.7 per cent; Louisiana-Mississippi, 10 per cent; Illinois, 20.4 per cent; New York, 18.5 per cent; Pennsylvania, 16.9 per cent; Michigan, 23.8 per cent; Indiana, 15.4 per cent; Kentucky, 39.2 per cent; Minnesota, 12.8 per cent; Arkansas-Tennessee, 11.5 per cent; California, 5.9 per cent.

trading that economic conditions is forcing on the automobile dealers is also steadily forcing on the dealer the necessity for buying the used car at the very lowest possible figure. He asserts that

the old and ruthless economic principle of supply and demand is having a powerful effect.

Supply Ever Greater

"In comparison to the number of new motor vehicles supplied every year," says Mr. Shaw, "the visible supply of used motor vehicles becomes ever greater. The demand for new motor vehicles very naturally must decrease in ratio. The supply of used motor vehicles increases each year in greater proportion than the demand. This weakens the selling price level for used cars. The automobile dealer trading in the old car must keep his allowance price below the selling price level, if he is to sell the used vehicle without a loss. Few of them are doing it. The public expects too much money for its used vehicles, in comparison to the market value. Sales of new cars become more and more a repeat business.

Percentages of Trade-Ins

"In Minnesota 53.6 per cent of all new car sales in the first quarter of 1924 involved the trading of an old car. In Arkansas-Tennessee 65.9, California 66.3, Ohio 60.7, Illinois 74.1, New York 63.2, Pennsylvania 52.8, Michigan 70.8, Indiana 76.9, Iowa 75, Missouri 66.5, Wisconsin 58.5, Oregon 72.7, Washington 53.1, Louisiana-Mississippi 61.8. All indications point to an increase in the percentage of repeat sales, with the expectation that by the end of 1924 75 per cent of all new car sales will involve the handling of a used car. Such a large part of the business being affected, it must be handled without losses of the sizes recorded in 1922 and 1923."

The READERS' CLEARING HOUSE

Questions & Answers on Dealers' Problems

Buick Flywheel Marks

Q—Please tell me how to time the valves on a 1917 model D-45 Buick by marking on fly wheel.—Kansas Subscriber.

The exhaust valve in the Buick engine closes 12 degree after upper dead center and the inlet opens 3 degrees later. If you measure the diameter of the fly wheel and refer to the valve timing story given in the February 14, 1924, issue of MOTOR AGE, it will enable you to easily time the valves on this engine. Should you run into something that you do not fully understand communicate with us and we shall make every effort to clear up the matter for you.

Star Weight

Q—What is the weight of the new model Star roadster?—F. A. Work, Tiffin, Iowa.

The weight of the 1924 model Star roadster is 1700 lbs.

Chevrolet Data

Q—What is the weight of the Superior Model Chevrolet roadster?

The weight of the Chevrolet Superior roadster is 1715 lbs.

Q—What is the highest possible maximum speed of each?

It is impossible to answer this with any degree of accuracy but it lies in the neighborhood of 55 miles per hour.

Q—What is the maximum brake h.p. of the motor used in the new Star? At how many r.p.m. is its maximum h.p. developed?

According to information supplied by the Star Company the Continental engine used in that chassis develops 35 h.p. at 2500 revolutions per minute.

Q—What would be the maximum number of r.p.m. the motor would turn pulling the car?

This information is not available.

Q—How much could this be increased by tuning for speed.

We have no definite information on this and would suggest that you communicate direct with the Star Motors Company.

Q—At what number of r.p.m. is this motor developing its maximum torque?

This information is not available from our files and can be secured direct from the factory.

Don't Race

Q—Would the bearings of this motor stand up under continued extreme high speed?

The engine is not built for continued high speed use and if you wish to use the engine for racing it is recommended that the lubrication system be changed to a full pressure type.

Q—What is the maximum brake h.p. of the Superior Chevrolet motor?

We do not possess figures covering the Chevrolet Superior but the power curve for the 490 Chevrolet which is in most respects similar to the Superior shows a

The Readers' Clearing House

THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.

Readers' names will not be published with articles, if a request to this effect is received with the letter.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

maximum h.p. of 35 at 1900 revolutions per minute.

Q—At what number of r.p.m. is maximum torque developed in this engine?

This information is not available, from our records and perhaps may be secured direct from the factory.

Q—What would be the maximum r.p.m. the Chevrolet motor would turn when pulling the car? How much could this be increased by tuning for speed?

We have no accurate information on this and as on several of the other questions would suggest that you communicate with the makers of the car.

Curve Absent

Q—Would the bearings of the Superior Model Chevrolet motor stand up under continued extreme high speed? Would the stock oiling system be sufficient?

The answer given for the Star engine should apply to the same degree, on the Chevrolet Superior engine.

Q—Please mail me a power and torque curve of both the Star and Chevrolet Superior motors?

We are mailing you a power curve of the Chevrolet 490 engine as this is the only chartered curve we have. The curve does not carry the torque line, but covers only the brake h.p.

Another Tricky Ammeter

I read with interest the answer to John N. Patreque in your issue of March 6th. I had exactly the same trouble with a car about 6 months ago. Driving at speed under 15 miles per hour, before the generator got up to its maximum charging rate, the ammeter would show that the generator was charging all right. As soon as the speed was increased, the needle would drop back to zero and stay there.

The only way to make it show charge again was to drop the engine speed down as low as it would idle. Then the needle would show charge until a high speed was attained. The cutout was O. K. and so was the ammeter and wiring and all connections were tight. I took the generator apart and found that there was an intermittent ground on the main brush frame across the mica insulation.

Are Formed

Apparently when the current was heavy enough, an arc was formed across the mica and this arc was maintained until the current dropped so low that the arc would break. The condition naturally was getting worse all the time. By reinsulating the brush frame parts the trouble was entirely eliminated. Maybe your correspondent is having the same trouble that I had. Of course a low tension test would not show the ground, but probably a 110-volt test would have cause the arc to form.

PREVENTIVES FOR AXLE BREAKAGE

Q—One of our customers has had considerable trouble with the rear axle breaking off near the end on a 1921 Overland Sedan equipped with wire wheels. He has broken four axle shafts in one season. Kindly let me know what you think the trouble is.—Premo Sales Agency, Iron River, Michigan.

The taper on an axle shaft at the hub end of a 1921 Overland is quite abrupt and unless the hub has about a 90 per cent contact on the taper of the shaft the shaft cannot deliver good service. When installing a new shaft on this model, it is advisable to remove the axle shaft hub key and lap the hub to the taper on the axle shaft.

Apply Paint

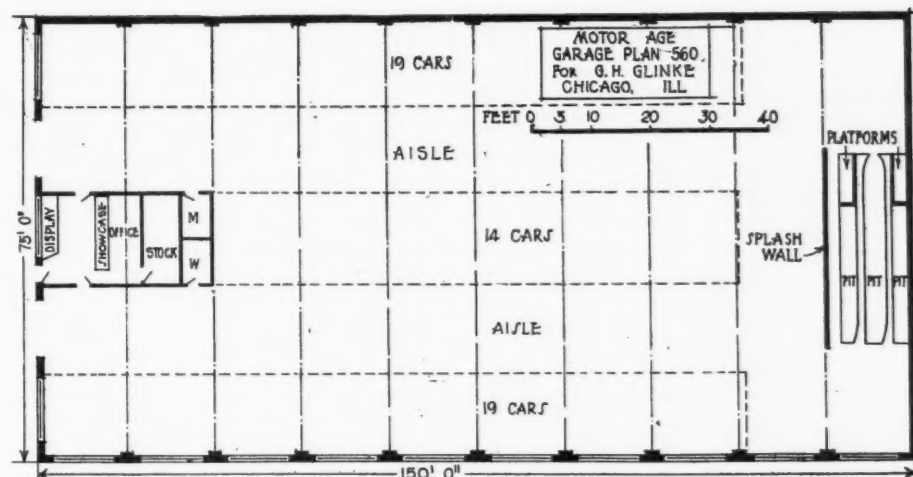
By applying a thin coat of Prussian blue it will enable you to determine the percentage of contact of taper to taper in the hub. Still another and more permanent cure for this trouble is to secure from any authorized Overland dealer the new style replacement axle shafts and hubs which may be applied to the 1921 axle. These new style axle shafts are considerably stronger and larger in section than the 1921 original equipment.

Wash Rack and 52 Car Storage Capacity

Q—We have a layout 75x150 ft. that has a 16 ft. alley at the left hand side. We wish to built upon this a storage garage with entrance on one side and exit on the other side with an office and accessory store between. We also wish an up-to-date wash rack preferably at the rear.—G. H. Glinke, Chicago, Ill.

It is too bad that your lot is not 25 ft. wider, as in this way it could be more efficient storage plant and at the same time there would be more space for the office and also wider aisles. However, as we have laid it out it will take care of 52 cars. The wash rack that we have shown is of the progressive type recommended by MOTOR AGE, of which we are sending you a blueprint.

The roof of this building had best be carried by trusses spanning the whole width, for if posts were run through the



center they would interfere with the center row of cars, cutting down the number to some extent. We have shown

a rear exit but believe it would be well to disregard this and use only the front exit.

Architectural Service

IN giving architectural advice, MOTOR AGE aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things, we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated and how large it is expected to be.

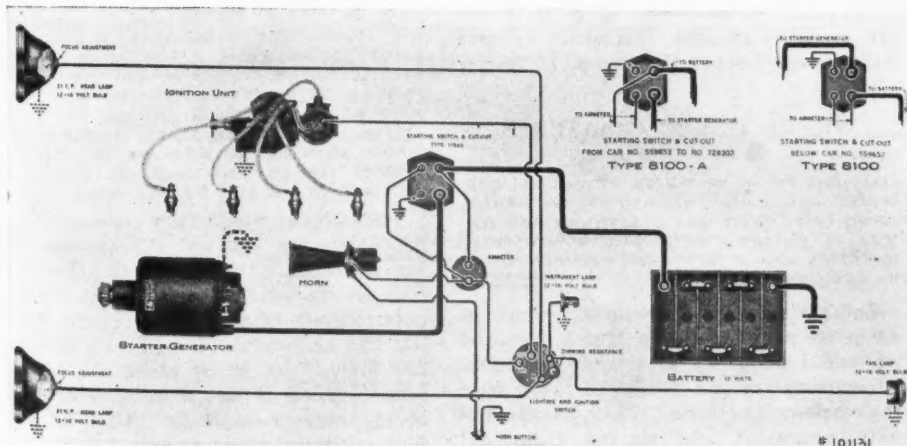
Number of cars on the sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

How much of an accessory department is anticipated.

Corrosion in Horn Necessitates Reversing the Battery



Q—Why is the positive terminal grounded on the 1923 Dodge car instead of having the negative terminal grounded? What is the advantage? Send internal wiring diagram of the 1923 Dodge. I have wiring diagram of older model Dodge car in Dykes Automobile & Gasoline Engine Encyclopaedia on page 369, but would like diagram of the new Dodge also.

Wiring diagram is shown in accordance with your request. On this model car the position of the horn button was changed from the door to the steering column. On the older cars the wiring of the horn was such that current came from the ammeter to the button and through the horn button to the horn. When the horn button was located on the steering column this arrangement was changed and the current from the

ammeter came to the horn first and then to the horn button and through the button contact to ground.

When this change was made it was found that with positive battery connected to the horn there was a certain amount of corrosion which took place inside the horn, due to its always being connected to positive battery. We do not have a full explanation of the reason for this, but it is similar to the action which takes place on the positive battery terminal.

Accordingly when this was found to be the case the battery was reversed so as to eliminate the corrosion in the horn. As far as the rest of the electrical system is concerned it does not matter

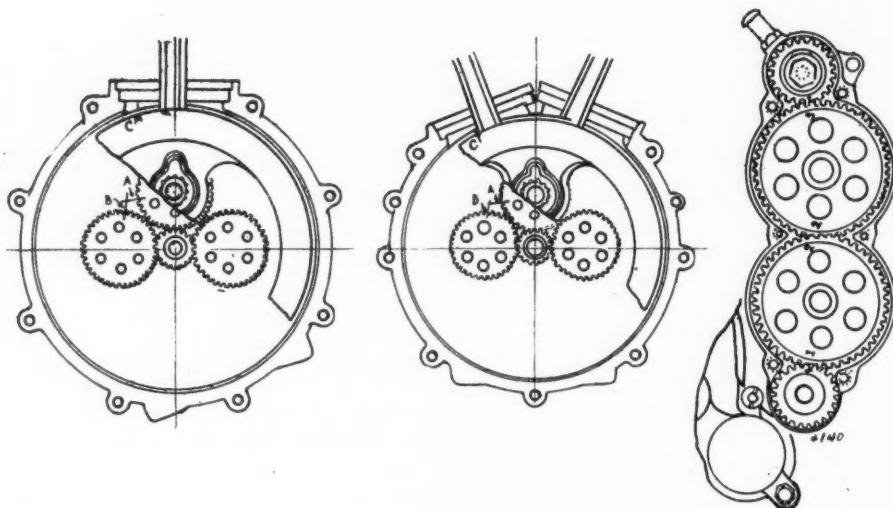
whether the battery is turned one way or the other. However, if on a car where the ammeter is reading properly you should reverse the battery you would then find that the ammeter would read backwards. It would indicate discharge when the generator was running and it would indicate charge when the engine was standing and the lights were turned on.

Current Going in at the Negative Terminal Will Be Discharge Current

Q—Will the electrolyte go into the plates if the charging current is sent in at the negative terminal? I know it would not be good for the battery but I would like to know what injury will result if the current is reversed.—Gerald F. Hoffman, Princeton, Illinois.

If you connect a battery up to a generator or other source of current in such a way as to send current in at the negative terminal and out of the positive you are discharging the battery. In other words both the battery and the source of current are acting together to send current the same way in the circuit. Then unless there is considerable resistance in the circuit you will have such a heavy flow that it may burn out some of the wiring. The action would be to further discharge the battery instead of charging it and you would damage the plates and thin out the electrolyte. If such action is continued long enough the plates will be reversed and in nine cases out of ten the battery will be ruined for the reversal of the plate usually loosens the active material and makes it fall from the grids. The only way to properly charge the battery is to connect positive generator to positive battery and make the current go through the battery the reverse way from what it would on discharge.

Timing the Valves of a 1910 Indian Motorcycle



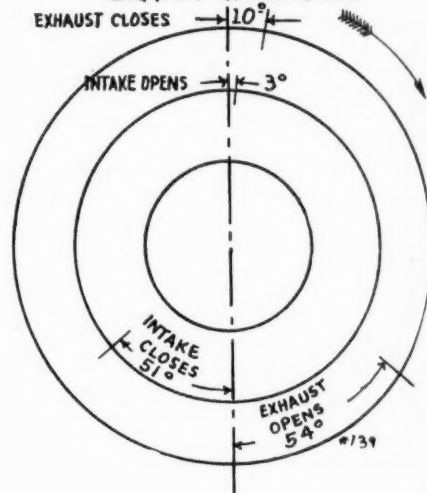
Q—If possible give me a valve timing diagram for a Hedstrom motor cycle engine number 20 B 316.—Carl Anderka, Ben Arnold, Texas.

Illustration at figure 139 is a timing diagram of the 1910, five horse power Indian Motorcycle engine referred to. It will be noted that the exhaust valve closes 7 degrees after the inlet valve opens. In other words the inlet has

an overlap or lead of 7 degrees. In this case the intake opens at top center on piston travel and the exhaust closes 1/32 of an inch beyond or past upper center. The illustration number 140 shows the correct marking on the gears and the method in which they should be lined up so to permit retiming without recourse to piston travel marks.

PISTON MOVEMENTS WITH RELATION TO VALVE ACTION
 INTAKE OPENS AT TOP DEAD CENTRE
 INTAKE CLOSES $\frac{1}{32}$ BEYOND LOWER " "
 EXHAUST OPENS $\frac{1}{32}$ FROM LOWER DEAD CENTRE
 EXHAUST CLOSES $\frac{1}{32}$ BEYOND TOP DEAD CENTRE
 IGNITION FROM ADVANCED SPARK $\frac{3}{8}$ BEFORE TOP DEAD CENTRE ON COMPRESSION STROKE

CRANK MOVEMENTS



PERHAPS OIL IS NOT CHANGED OFTEN ENOUGH

Q—How can I keep the wrist pins lubricated on the 1924 Buick, 6 cylinder that is (24-50) (24-45)? After every 700 miles they go loose. The oil pump works good, but the wrist pins do not seem to get enough oil.—George Podlasek, New Britain, Conn.

We are surprised at having a report of this nature and wonder if the oil changing has been neglected. Oil in winter should be changed every 500 miles and when this is done the crank case should NOT be washed out with kerosene. There are two reasons for this. One is that the kerosene remaining in pockets of the motor will dilute the new oil and the other reason is that it tends to wash off particles of grit which may be adhering to the crank case walls and cause them to get into circulation again and perhaps get into the bearings. Another possibility is that the cars in question are some of the first put out in which no vent holes were provided in the valve covers on top of the engine. With no vents there was some tendency for water vapor to condense and get into the oil, thus reducing its lubricating properties. If this is the case, three $\frac{1}{2}$ -in. holes should be drilled in the center of the upper portion of the valve cover, these holes being equally spaced lengthwise. It is of course possible to splash more oil to the cylinder walls by tapping the connecting rod dipper with a hammer so as to broaden them somewhat. This will splash more oil to the cylinder walls and wrist pins. Another possibility is that you are using a poor grade of oil or one that contains or liberates acid. It might be well to get

some litmus paper at the drug store and, dip it in the oil that has been used or that you are about to use and see if the blue paper turns pink. If so it shows the presence of acid. Ammonia or soda will turn the paper blue again.

WHERE TO GET ARMATURES REWOUND

Q—Let me know where we can get generator and motor armatures overhauled, these being from the generators and motors of different cars, also where small motors such as for cream separators can be overhauled.

Several armature rewinding concerns advertise consistently in MOTOR AGE, and we would suggest your referring to these advertisements and getting in touch with the various concerns. They handle not only generator and starter armatures but also other small armatures.

Possible Cause of Jerky Operation

Q—Let me know what will cause a small Overland car to run jerky in high gear, when running slowly or on a hard pull in high gear. It runs all right in low and second gear.—Genoa Garage, Gianoli & Courti, Genoa, Wis.

You should check the spark to see that it is not missing. This is done by removing a wire from the plug and holding it within one-quarter inch of the engine while the engine is running slowly. If the spark misses occasionally it may account for the trouble you are having. A cracked porcelain in a spark plug will also give trouble at low speed and heavy pulling. If the trouble is not due to the ignition it is possible that you have an air leak in the intake manifold gasket.

HOW LONG TO RUN TO CHARGE UP THE BATTERY

Q—Suppose that a 6 volt, 80 ampere hour battery is discharged in operating the starter for 2 minutes, the current being 110 amperes. How much current does it use and what should the gravity reading be at the end of the discharge? Also advise how long the car has to be driven at 20 miles per hour with the ammeter showing 12 amperes in order to replace the current used.—H. Brown, 70 Kirtland St., Grand Rapids, Mich.

The current would vary somewhat during discharge but we will assume that the average is 110 amperes. For two minutes we would then take out 220 ampere minutes of electrical energy. Dividing the ampere minutes by 60 gives us 220 divided by 60 or about 3.5 ampere hours, which is but a small proportion of the battery capacity. The full battery capacity of 80 ampere hours however, cannot be obtained on a high rate discharge such as the starting motor takes.

The gravity will drop from 1280 to 1150 on full discharge which at this rate would take 15 or 20 minutes so that in two minutes the gravity would hardly go down enough to show distinctly on the hydrometer.

To replace the energy we have to figure that the battery is not 100 percent efficient. If we consider it 80 per cent efficient we will have to put in 275 ampere minutes to make up for the 220 ampere minutes withdrawn. Then dividing 275 ampere minutes by 12 amperes we find that the car will have to run for 23 minutes to replace the electrical energy.

Did You Ever Think of This?

Q—Advise if it is harder to pump up a 35x5 truck tire up to pressure with a hand pump, with a 2 ton load on the tire, or will it pump up easier if the load is off of the tire? We had an argument here in regard to this. One man claims the tire would pump up just as easy with the load as without. I claim it will pump up easier without the load.—C. F. Jackson, Jackson Garage, Lewiston, Minnesota.

It is our opinion that the difference is very slight and could not be detected by any ordinary means. Suppose we take the case where a car is jacked up so that there is no load on the tire and then pump it up to recommended pressure, say 90 pounds per square inch. Then, if we lower the jack so as to allow the load to rest on the tire we will find that where the tire makes contact with the road it will flatten out to a certain extent. This means that the total volume of the air in the tire has been reduced due to the flattening of the tire.

There is a mechanical rule to the effect that if the volume is reduced in this way the pressure is increased proportionately. Of course we have all seen a tire defect at the contact with the road and we know that the deflection is slight. Accordingly the reduction in air volume will be slight and the increase in air pressure will also be a small amount.

We doubt if the difference in air pressure could be detected with an ordinary pressure gage. However, if it should be possible to measure the difference with a pressure gage we believe that the reverse would also be true and if the tire were

pumped up to 70 pounds pressure with the load on the tire and should then be jacked up that the pressure would be slightly lower. In the question as you put it, the two-ton load probably distributed over all four tires rather than to one.

Replacing Bearings

Q—Will you kindly explain the necessary operation to adjust or replace the main crankshaft bearings in the motor of a 1919 Overland Model 90, also a 1919 Maxwell Model 25.—Grant H. Hoagland, Britton, Mich.

Operations necessary to replace main bearings on the two engines mentioned are fundamentally similar. These engines carry crankshafts which are mounted on two bearings only. We cannot give you the exact sequence of operation but the job consists mainly in removing the engine from the frame, taking out both end plates which form the main bearings, securing new bearings and scraping and fitting in the bearings to the shaft while on the bench.

Then install the plates and shaft assembly into the crankcase and the job is done. In fitting a solid bearing which will be encountered as the front bearing on both engines, great care should be used and if possible a reamer of about .001 oversize of the crank journal should be used for the preliminary fit. In every case great care should be taken to see that the crankshaft and main bearing journals of each end are in good condition, that is free from ridges and that they are not eccentric or tapered.

This Autolite Charges Too Much

Q—One of our customers has a Durant six on which the generator is overcharging the battery. It is a G. J. Auto-Lite generator and has a G. G. No. 2191 armature in it. (I am not sure about the number of the armature.) This generator was placed on our test bench and seemed to be O. K. However, on the car, where the engine may turn up to 3,500 r.p.m. at high speed, it generates too much.

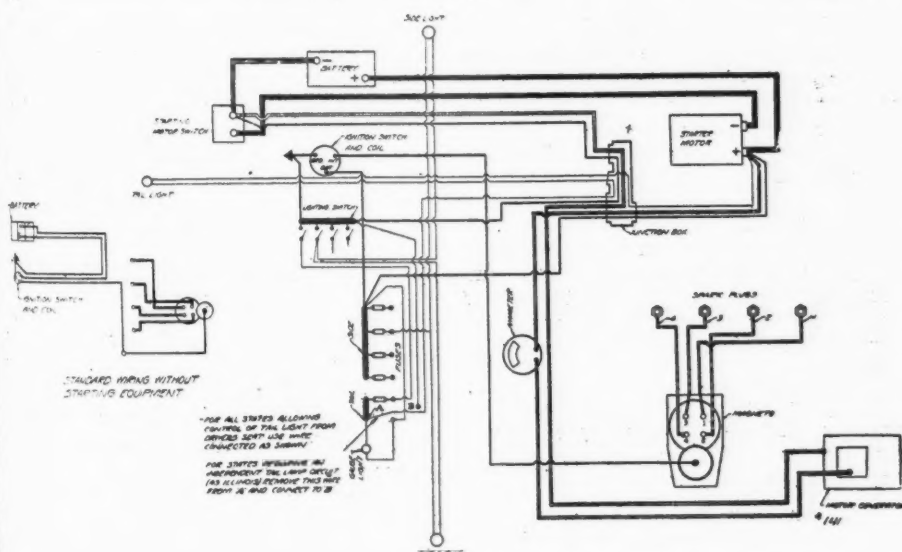
The output goes as high as 30 amperes. We feel that this generator was never designed for this engine or for such a high speed as the owner of the car says the generator has always acted that way. A Dodge headlight dimming resistance was used in series with the field, but the generator still charged 21 amperes maximum. Could this trouble be overcome by eliminating two field coils, or reversing the two coils and using them as a bucking series winding? We might experiment with this generator, but it takes a lot of time and the owner does not wish to pay for experimenting.—C. W. Lundy, Tonopah, Nev.

Apparently the generator is the wrong one for the car or else it has the wrong armature in it. Perhaps at some time the car was repaired at some service station where they were not entirely familiar with electrical generators and starting motors and in working on it the wrong generator may have been installed or the wrong type of armature used. We are advised by the official Auto-Lite Service Station in Chicago that the proper generator is G. J. 4009, while the proper armature is G. J. 2144.

We are also advised that this is a 4pole third brush machine, although in some of our wiring data it is shown as a 2 pole, third brush machine. There is not much question however, but what this machine has third brush regulation and with such machines the output should drop off at high speed so that excessive high speed to which you refer should not cause the overcharging. Another possibility occurs to us and that is that the generator on the car is not only unsuitable but is intended for the reverse rotation.

Then if some electrician not familiar with third brush machines reversed the field connection so as to make it turn in the right direction he would also have destroyed the regulating ability and the third brush feature would make it charge too much at high speed. If you do not readily overcome the trouble we would recommend it being sent to some authorized Auto-Lite Service Station so as to make sure that it is properly repaired.

Diagram for Packard Starter That Runs All the Time



Q—Can you furnish me with a wiring diagram of Bijur starter and diagram of starter switch for 1922-23 Packard, two ton truck. There seems to be a short circuit in the starter switch and the starter runs all the time unless one wire is disconnected.—Robert H. Ludington, 597½ Dundas street, Woodstock, Ontario, Canada.

Diagram of the switch proper is not available but if you will remove it and examine it, it should be easy to note any short circuits which will be visible when the switch is disassembled. Wiring diagram of the Packard with the Bijur system is illustrated at Fig. 141.

On Page 22,

Another

Flat Rate Article

Two Chevrolet Diagrams

Q.—Give wiring diagram of 1921 Chevrolet, Model 490, and also diagram of the 1923 Chevrolet Superior Model. Is it possible to rewire the 1921 car with the new Superior wire harness. Show the color of each wire in this bundle and advise what changes are necessary.

1.—You have asked us to do something that is a little out of our line, for we believe the man who works on electrical systems should be independent of color schemes, although of course at times they are of assistance for rapid work.

We are advised that the wiring assembly from the 1923 car can be used on the 1921 car with slight change at the head lamp plugs.

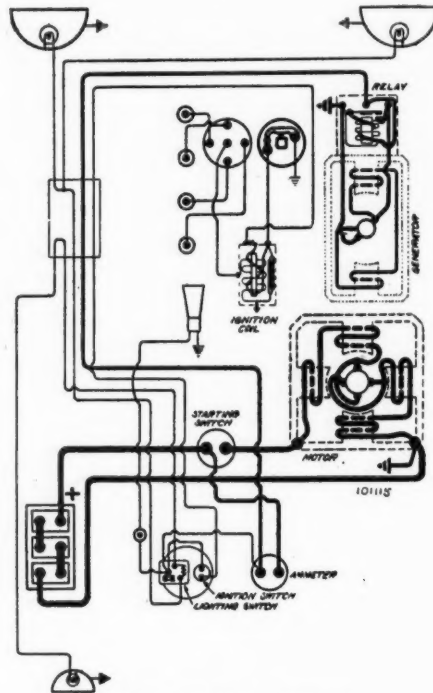
We are showing diagram of the 1921 Chevrolet and refer you to the January 17th, 1923, issue of MOTOR AGE for 1923 wiring. From these diagrams, you should be able to see exactly where each wire should go. You can then take the wiring assembly and test it out to determine the internal circuits.

For this purpose, a 6-volt test lamp is the best thing to use. One terminal of the lamp should be connected to the battery and the other terminal to a test lead. The second test lead connects to the other battery terminal and when the two test leads touch each other, the lamp should light up. These test leads may then be used from terminals at one end of the cable to terminals at the other end to see which terminals are connected.

2.—Will installing Dodge valves in a Chevrolet head cause the car to use more gas and will it idle slower with the larger valves? Would also like to know if the car will throttle down better and if it will have better pick-up.

2.—The chief advantage of larger valves is found at high speed where it is essential to get as much fuel as possible into the cylinder. Large valves may have some light effect on the pick-up, but we doubt if the operation when idling will be noticeably affected.

3.—After installing Dodge valves, would there be any advantage in using a larger



Chevrolet 1921 Diagram

intake manifold and a larger carburetor?

3.—Here again the operation at high speed will be chiefly benefited by larger manifold and larger carburetor.

4.—Why is it that my Chevrolet will not run below 12 miles per hour at an even speed? It will go as fast as 58 miles per hour. The engine will not idle smoothly at low speed.—Henry Reiser, Jr., 8300 Morganford Road, St. Louis, Mo.

4.—There are several possible causes for poor idling. One is air leaks at the gaskets between carburetor and manifold or between manifold and cylinder block. A frequent cause is lack of heat at the intake manifold which permits condensation in the manifold and gives unequal mixture in various cylinders.

Another possible cause of poor idling is uneven compression in the various cylinders which is sometimes caused by cylinder being scored.

The ignition timing should be such that the interrupter contacts open when the piston is up on the top of the compression stroke or has barely started down. At the same time the spark advance lever should be in the retard position.

You mention the firing order and it is possible that you have the spark occurring at the wrong time in the number one cylinder.

You can turn the engine over until you get the compression in the number one cylinder and then as the piston comes up on the compression stroke you can stop turning the engine when the piston gets to the top. At this instant the interrupter points should open and the distributor brush should be in a line with a segment which is connected by a high tension wire to a spark plug in the number one cylinder.

Consider Displacement

Q.—I have been interested in the characteristics of the high and low speed engines that are used in the automobile industry. So far I have not been able to find anything in any book or magazine that I can get that has dealt with the subject very much. I have been seen automobiles with a lower horsepower rating and a higher speed engine climb hills that a lower speed engine with higher horsepower rating would not climb. I have asked many men supposed to be good men in the automobile industry but they have been unable to give a satisfactory explanation.—Fred Hartman, Albert, Tucker County, W. Va.

The power that an engine develops depends on the amount of fuel that can be burned in a minute, assuming that in all cases the compression is the same. On the other hand assuming that two cars each have engines of the same power the one that has the lightest total car weight will apparently be more powerful as far as climbing hills is concerned. The lighter weight high speed engines get their power by higher number of revolutions.

This means that the combustion chamber fills up and fires more rapidly and may burn a greater amount of fuel in a given time than an engine of slower speed with greater cylinder capacity. Then with the lighter engine it is possible to make the car lighter and therefore have a vehicle which operates better. It must also be remembered that carburetion has been improved in the last few years and that heated intake manifolds have also contributed toward better operation.

The high speed engine also has better torque characteristics so that at low car speed it operates better. One misleading factor in comparing two engines is that the S. A. E. horse power rating which depends on the bore only does not give any idea of the actual horse power of the engine. Not only is it possible that the compression may be higher in some engines but the valve and intake manifold arrangement may be such that an engine with apparently the lowest horse power will be able to take in more fuel and burn it more advantageously.

CHEVROLET OIL TROUGH CLEARANCE

In the Jan. 31 issue of MOTOR AGE was published a letter from a subscriber who recommended that Chevrolet cars be serviced so that each connecting rod dips $\frac{1}{8}$ in. into the oil in the trough to assure proper lubrication. With reference to this suggestion the Chevrolet Motor Company requests MOTOR AGE to state that it recommends that the distance between the lower end of the dip on the connecting rod and the top of the oil trough be $\frac{3}{64}$ in. The company states that there is so much splash resulting from the oil entering the trough from the supply pipe that it is not necessary to have the oil dip extending below the level of the top of the oil in trough.

1909 Paige Wow

Q.—I have been reading MOTOR AGE for some time and especially the Reader's Clearing House section. Since I began reading the magazine I bought an old Paige automobile which I believe is a 1909 model. It is a four cylinder car and has Bosch ignition outfit. I am going to make a racer out of it, but since taking it down and fitting bearings and rings I have timed it up as I thought it should be but cannot get it to do anything toward starting. The firing order is 1-3-4-2. Send specifications on the valve timing, also ignition timing on this car.—Just a Mechanic.

We certainly admire your courage in trying to make a racing car out of this model. While we have no definite information on the valve timing we believe that if you will time the exhaust valve to close about 10 degrees after top dead center and the intake to open about the same time or a few degrees later that you will get the engine to run.

Duplex Ignition on 1914 Packard

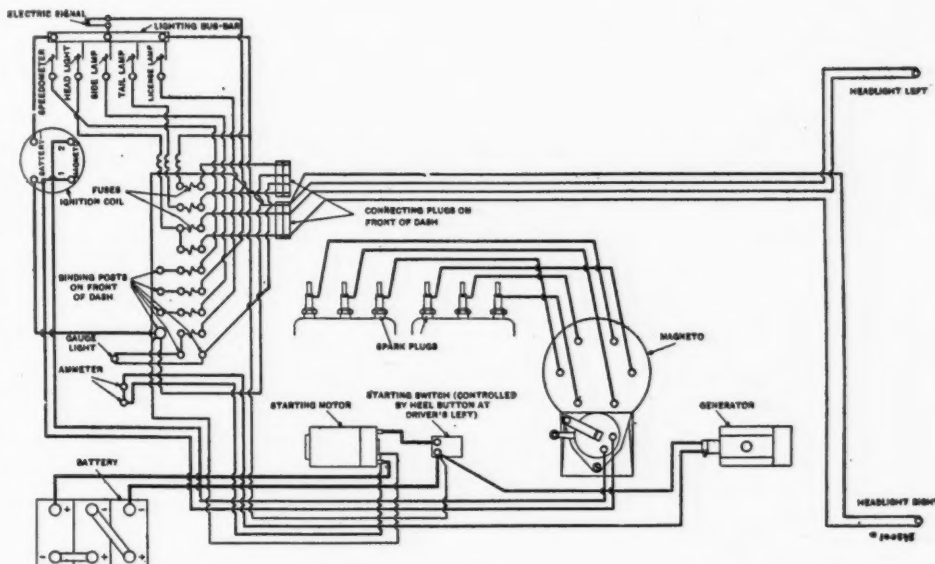
Q—We are unable to find a wiring diagram of a Packard car No. 50670 Bosch dual ignition No. 98591 in our stock of Motor Age publications. We do not know year or model of same. Send wiring diagram and advise if the magneto is high or low tension. The battery ignition is dismantled and once in a while it will start on magneto.—Albert G. Betsch, Springfield, Ohio.

According to the number of the car you give, as nearly as we can determine, the magneto in question is a high tension magneto known as a Duplex. On the other hand you state that the magneto is a Dual. We are accordingly showing Packard wiring diagram which gives the Duplex magneto also another wiring diagram which shows the circuits for the Dual magneto only.

In the Duplex system there is essentially only one source of ignition and that is the magneto armature although battery current is allowed to flow through the same winding of the armature in order to help the spark at low speed.

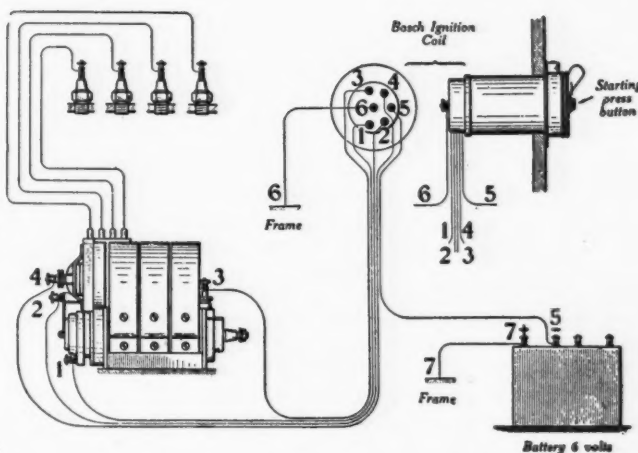
In the Dual magneto, on the other hand, there are essentially two separate ignition systems the only thing that is used in common being the distributor.

The method of wiring should be quite evident from the diagram the only precaution to take being in the case of the Duplex magneto. In this system it is essential to have no accidental ground in the car wiring for this will prevent the magneto operating. To check for this you can take a wire and make a good connection at the frame of the car and then touch the other end of the wire first to positive battery and then to negative battery. If you get a flash or spark at either battery terminal when connected to ground it shows there is a ground in the wiring and this would have to be corrected before the magneto would operate on the battery side of the switch.



Above: 1914 Packard wiring with Bosch duplex magneto

Right: Wiring of Bosch dual high tension system



When connected up there is a possibility of having the two wires on the magneto interrupter reversed and the best way to check this is to just try them one way and crank the magneto and try the spark. If the spark is not very good then reverse the wires and

again try the magneto. The way that the magneto gives the best spark, is of course, the right way to leave the wires connected.

If operating as a magneto the spark is poor at low speed it is possible that the magnets need recharging.

OVERHAULED EIGHT-CYLINDER ENGINE STILL KNOCKS

Q—We have just overhauled a model 53 Cadillac, putting in 8 new pistons complete with rings, 8 new piston pins and bushings, 16 valve tappets and guides, 4 new connecting rod bearings also tightened main bearings and set valve tappets at a clearance of .002.

There is still a slight knock in the motor when it is idling, sounds like a valve tappet, but we are unable to locate the noise.—Goodwin & Wheeler, Clifton Forge, Va.

It is our belief that the camshaft driver gear is possibly loose on the camshaft, or that one or more camshaft bushings are loose. There is also the possibility that the tappets are not correctly set. The camshaft on the model 53 is so constructed that it is necessary to have the cams in a certain position in order to properly set the tappet clearance. In case you do not possess the Cadillac instruction book we are quoting the following from that source of information. "To place a cam in the proper position to set valve tappets operated by that cam proceed as follows: Open

the relief cocks on the cylinder and crank the engine by hand until the valve that you are timing has just seated. Then turn the engine further by hand in the same direction $1\frac{1}{2}$ inches on the fly wheel. The cam is then in the correct position for timing the valve. When the cam is in the proper position, the clearance between the end of the valve stem and adjusting screw in the cam slide should be from .002 to .003 of an inch when the engine is cold. Each tappet should be timed in this manner." In other words tappets should be set on the neutral point of the cam and as the cam has an unconventional contour setting them on any other than the correct position, will show either an increase or decrease in the tappet clearance, when the engine is moved farther in the direction of rotation. In case the method suggested fails to locate the noise we would suggest that you cut out one cylinder at a time by closing both valves on that cylinder accomplished by removing the tappets so that the valves will not open.

HOW WATER FOUND ITS WAY INTO THE CRANKCASE

Q—I have been reading your Clearing House questions and answers in January 3rd and February 28, 1924, issue of Motor Age in regard to trouble experienced by Mr. M. B. Keith with a Marmon 34. He has been having trouble with water getting into the crankcase and as I had a similar experience at one time I wish to tell it and also the remedy.

I had a Marmon 34 with removable sleeves and had trouble due to water getting in the crankcase. I tried all sorts of remedies but did not overcome the trouble. I found the cylinder block in good shape and used new gaskets but the water still found its way into the crankcase.

Finally I found that water was escaping from the water pump and working into the crankcase at the front end of the crankshaft. I put in new washers at the front of the crankshaft and new felt washers in the water pump and found that the trouble was thus overcome.—Fred Felcman, Rosenberg, Texas.

MOTOR AGE wishes to express appreciation for this suggestion and solution. It is possible that it will help Mr. Keith and other MOTOR AGE readers.

How Large City Garage Owners Benefit From Organization

Chicago Association Shows What Can Be Accomplished by Intensive Co-operative Effort Which Is Well Directed

OPERATING under a zoning system which it is claimed is unique in trade association work, the Chicago Garage Owners' Association has secured what it believes to be a thoroughly representative governing board of directors. Under the old plan it was felt that there were interests in the association which did not have the opportunity adequately to express their opinions on questions affecting the welfare of the organization's members. So it was decided to change the constitution and by-laws, to divide Chicago and Cook County into 15 zones, and to perfect organizations in each of these zones.

Meetings are held once a month at which time matters of especial significance to the zone members are discussed and they get together for an interchange of ideas which has proven to be very helpful. The zones are under the control of the parent organization and the supervision of the business manager, Robert Bland. When anything of a serious nature occurs at the zone meetings it is embodied in a resolution and sent to the big organization through the business manager. In this way the benefits to members of the association have been very materially increased.

Officers Are Directors

A president, vice president and secretary and treasurer are elected by each zone, and the president automatically becomes a member of the board of directors of the main association; so that the board of directors is thoroughly representative of the entire membership, and each zone, through its representative on the board, has a voice in the association's affairs.

This has worked out very satisfactorily and members declare that the opportunity to swap ideas and to meet others engaged in the same line of business are in themselves sufficient to justify the departure from the conventional mode of association government.

The association has organized its own gas and oil company and is supplying at present about one-third of its members. It has been active in its efforts to provide fuel of the best grade to the motoring public, and at the next session of the Illinois legislature plans to work for the passage of a law which will require the posting of gasoline specifications at pumps, similar to the measure now in effect in Wisconsin, and which will enable the car owner to know exactly the grade of fuel he is buying. The gas being furnished to the public by the association is a straight run gas of navy specification type. In addition it was



C. F. Burrows, president of Chicago Garage Owners' Association

responsible for the movement to enlarge the capacity of garage storage tanks from 550 to 1,065 gallons. Arrangements also have been made to supply members with Pennsylvania base lubrication oils at low cost.

Considerable advantage has been derived by members from the co-operative purchasing plan adopted about eight months ago, in the purchase of coal, alcohol, soap, tags and lamp bulbs. The co-operative purchasing committee, after careful study, has decided that there are only certain articles which they will recommend to the membership on which they can save money.

In many cases the intervention of the association has saved its members many times the cost of the annual dues. For instance, when the council of the city of Chicago was seeking to fix a license fee for garages, it was proposed to tax them \$1,000 a year. This immediately resulted in a strenuous protest on the part of the association, and it was explained to the city fathers that the imposition of such an exorbitant tax would result in putting the garage man out of business. Finally an ordinance was secured providing that garages were to pay a minimum license fee of \$25 with a scale of \$1 per car for the large garages. Also an ordinance was secured providing that persons renting garages containing four or more cars for hire must pay the minimum rate of \$25 per year, and must come under the license, sewer, building and fire prevention bureau ordinances, the same as a public garage.

The association also is responsible for the strict enforcement of the parking law

in Chicago which prevents a car owner from parking his car in the street all night. This not only has resulted beneficially to the members, but it has removed a menace to the driving public, and has lessened in many cases the chances of accident in night driving.

Efforts are being made to secure amendments to the Illinois lien law which gives to garage men a lien for storage, materials and labor expended on cars. One feature in the lien situation which has caused loss to the garage men is the fact that a large proportion of the cars in Chicago and Cook County are sold on time with recorded mortgages standing against them. These, of course, are superior to the garageman's lien for work performed after the recording of the mortgage; also, in many instances people buy used cars and mortgage them to a friend or relative so that the mortgage takes precedence over the lien and it often is impossible to recover anything even in a court action. Because of this situation it has been suggested by some of the members of the association that storage be charged for in advance and signs posted in the garages informing the public that the establishments are being operated on a strictly cash basis.

Savings in insurance costs to members have been effected through the consummation of a contract with a local concern to furnish industrial and liability insurance underwritten by Lloyds for 70 per cent of the value of the policy, which it is claimed saves the members from 30 to 50 per cent on their insurance.

Arrangements have been made with a firm of business engineers for a cost service to show the cost of doing business in each department. Systems are furnished wherever required at nominal cost: \$5.30 per month for a small garage and \$10.60 for one housing 150 cars.

Other services furnished by the association include legal aid, employment department and exchange of credit information. Work also is progressing on a plan to provide first aid to the owner of a disabled car.

Present Membership Is 400

Present membership in the association is about 400, which leaves about 600 yet to come into the fold. It was organized in 1910 and incorporated in 1912. In the respective zones committees have been appointed to circulate through the garage population and preach the association gospel in an effort to "sell" the garages on the benefits to be derived from organized effort.

The actual value of a membership in the Chicago Garage Owners' Association is declared to be approximately \$1,400

per year. The dues are \$25. These figures are based on a report of a certified public accountant on one of the garages participating in all the benefits offered by the association in purchasing gas, oil, soap, tags, bulbs, etc. The figures do not take into consideration the value of the indirect benefits such as the passage of beneficial legislation, legal service, employment facilities, etc.

Officers of Association

Officers of the association are as follows: President, C. F. Burrows, Sterling Garage; vice president, R. A. Goudie, Square Deal Motor Co.; treasurer, H. E. Halbert, Garfield Park Auto Station; secretary, J. G. Thomson, Rhodes Garage; business manager, Robert Bland.

Mr. Burrows, the president, is considered exceptionally well qualified to be at the helm of the association's affairs, having had 18 years' experience with the Consumers Company as division manager and assistant to the operating vice president.

Robert Bland, the business manager, while not at present in the garage business, is an old-timer and has success-



Robert Bland, business manager of Chicago Garage Owners' Association

fully operated garages of his own. He is now an honorary member of the asso-

ciation. Mr. Bland has been active in association work for years, having been the first president of the national organization, and also of the state association. Under his term as business manager of the Chicago Garage Owners' Association that organization has progressed steadily and is constantly increasing its measure of usefulness to its members.

Many Require Education

He believes that the value of an association in any industry is more generally recognized today than it once was, although there are still many who require education. The association is endeavoring to present to the garage people in a vivid way the value of a membership. The highest business ethics are constantly being advocated, and the garages are attracting high-class people, many of them college bred. The spirit behind the association is, that to succeed co-operation is absolutely required, and that no business man who is not guided by principles of moral integrity in his dealings with the public can long endure.

23 Years Ago This Week In Motor Age

(From MOTOR AGE of April 11, 1901)

Chicago's Opening Run

On Saturday the Automobile Club of Chicago will formally open the season with a run on the boulevard system of the three sides of the town, making a 20-mile trip. The start will be made at two in the afternoon from the club's headquarters, Steinway Hall. Fully twenty-five vehicles will be in the line. The itinerary of the run is as follows:

South on Michigan Avenue to Sixteenth Street, north to Jackson Boulevard, west to the river, east to Michigan Avenue, north over the river and through the Lincoln Park system, west to Humboldt Park, south to Garfield Park and east to Ashland Avenue, where the participants will disband.

After Milkmen

The automobilists, bicyclists and drivers of rubber tired carriages of Pittsburgh, Pa., are out in force after offenders of the old law against the throwing of broken glass into the streets. The automobilists are particularly anxious that steps be taken to stop the nuisance, as bits of glass may be sometimes the ruin of an expensive automobile pneumatic, and there are so many pieces of broken glass in the streets of Pittsburgh that immediate action in the matter is considered necessary. It is said that milkmen are the chief offenders.

Automobiles Cross Deserts

The spirit of the automobilist cannot be conquered. He is ever looking for new fields to explore. The land of the elephant and the camel has been invaded, and now, even over the great deserts of the East, the automobiles are speeding, to the wonderment of the slow-going caravans carried along by the motive power used since the time of Pharaoh.

Want "Automobile Day"

The Harvard Auto Corporation, 41 Columbus Avenue, Boston, is inviting manufacturers, dealers and agents of automobiles to co-operate with it in making April 19 (legal holiday in Massachusetts) "automobile day" in Boston. On that day, and for the week preceding and following it, the firm will make no charge to manufacturers, dealers or agents for the care and storage of their machines in its station. It has storage accommodations for 500 machines.

Shipments in a Month

The Olds Motor Works, whose factory was recently burned, just as it was ready to make the first delivery of vehicles and ship a splendid display to the Chicago show, has advised some of its agents that it expects to be able to make deliveries soon after the last of this month. Ransom E. Olds, president of the company, is authority for the statement that the cause of the destruction of the plant was a leakage in the natural gas pipe connections. The first start of the flames opened a three-inch natural gas main into the center of the building, which made the fire spread with lightning rapidity.

Goodyear Detachable Tire

One of the new tires for automobiles that is rapidly coming to the front is the Goodyear detachable pneumatic. The patent on this tire, judging from the rapidly increasing market it is finding, will evidently be an unusually valuable asset before long. The idea is in itself unique and its success is assured by durability and ease of repair to the tire.

Manufacturers Meet in Detroit

President Theodore C. Search of the National Association of Manufacturers

announces that the executive committee has selected the dates of June 4, 5 and 6 for the holding of the sixth annual convention of the association, which will meet in Detroit. These dates, which are somewhat later than the usual time of holding the annual convention, were chosen in order to secure the advantages of a more favorable season in Detroit than would be found in January, during which month the conventions have usually been held heretofore.

Roland A. Crandall Receiver For Transport Truck Co.

MOUNT PLEASANT, Mich., April 6. —Roland A. Crandall, 754 First National Bank Building, Chicago, has been appointed receiver of the Transport Truck Company, Mount Pleasant, Mich., and John Taylor Booz, attorney, 826 First National Bank Building, Chicago, represents Mr. Crandall in this matter. This is an operative receivership and the manufacture of trucks will be continued.

While the Transport Truck Company has suffered some severe losses during the past two years, the amount of their assets is said to be several times that of their liabilities, and the operation of the factory under receivership will enable them to make payment in full of all indebtedness and perfect a reorganization.

M. A. Holmes, president and general manager of the Transport Truck Company, has been placed in full charge of the company's affairs by Receiver Crandall. In this manner only a slight interruption of the general routine of business has been occasioned.

Shipments of trucks and parts are already being made. The company has at the present time a goodly number of orders on their books.

SQUEEKS & RATTLES

HE WAS selling automobiles and his first call was upon an old Dutch doctor. He started right off with a long verbal outlay of the fine qualities of the car. Next, he tried a demonstration on the doctor and the latter seemed very much impressed. "What do you think of her?" asked the salesman. "Isn't she a dandy?"

"By gollies!" exclaimed the delighted prospect. "She's fine. Dot's a great t'ing. Effry doctor in town should haff vun."

Then elapsed a period during which neither spoke. The salesman drove on, doing all sorts of stunts with the car and delighting the doctor beyond words. Then he turned again to his prospect.

"Don't you think it's a time saver and a good investment?" he asked.

"Sure. Dot's de stuff all right," was the reply.

"You think it's good for you?"

"It's de perries," said the doctor.

"You know you need it, don't you?" the salesman waxed warmer.

"Sure! I should say so."

"Well, why the hell don't you buy one?"

"Vell, vy the hell don'd you ask me?"

Too Soon

Hall Boy—"De man in room seven has done hang hisself!"

Hotel Clerk—"Hanged himself? Did you cut him down?"

Hall Boy—"No, sah! He ain't dead yet!"—Life.

Hi Hill says: "When a honest hen is laying a foundation for a family, and doing all the hard work, some boob rooster is always ready to do the crowing."

Tough

Two negroes were lying behind a packing case on the docks at Brest taking the labor out of the alleged labor battalion. Said one boastfully:

"Boy, Ah comes f'um a tough breed. My ole man done cut his nails wif a ax an' brash his teeth wif a file."

"Hu!, ain't so tough. Mah ole man am a plumber, an' twice a week he done shave hisself wif a blow torch."—Legion Weekly.

History

"I'll show you an old, old tintype of the family," said she cooly, leading me into the living room.

"Ah," thought I, "a sweet, old-fashioned maid! Lovely echo from the romantic past. Here should be a background of hollyhocks, sweet Williams, and lilacs, with sweet music of the minuet sounding faintly in the distance."

She led me to the window.

"There's the damn wreck," and she pointed to a flivver at the curb.—Stanford Chapparral.

A man-about-town is a guy who knows where there is a place to park.—Ohio Motorist.

Do It

There isn't much to do or say,
When a guy feels this way,
There isn't much to do, at all,
The trick is just to do it.

There's never much to think about,
You can always count the third strike out.
But when the count stands two and three,
The hardest trick for you or me,
Or anyone, for all of that, is—do it.

And when your teeth feel kinda loose
And the old battery's lacking juice,
There's just one thing for a guy to do,
But the trick is just to do it.

—BABE ROOT.

Me, Too

An advertisement for an automobile says: "It Stands Alone." Gimme one that runs with the pack.

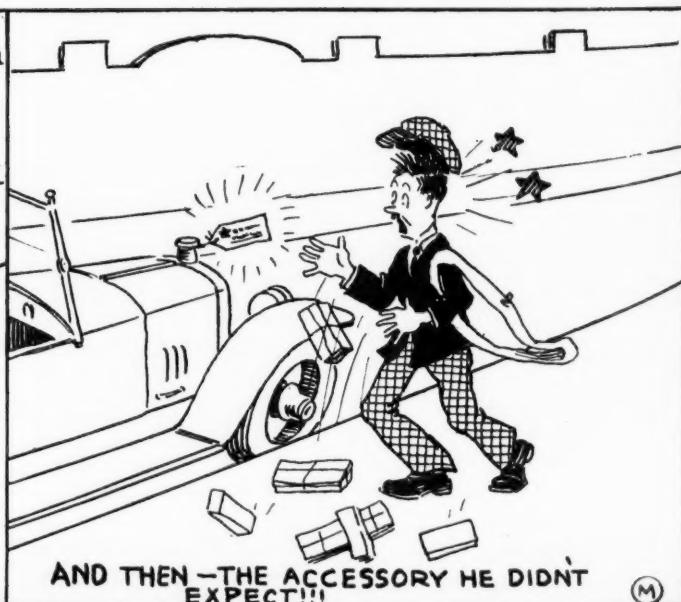
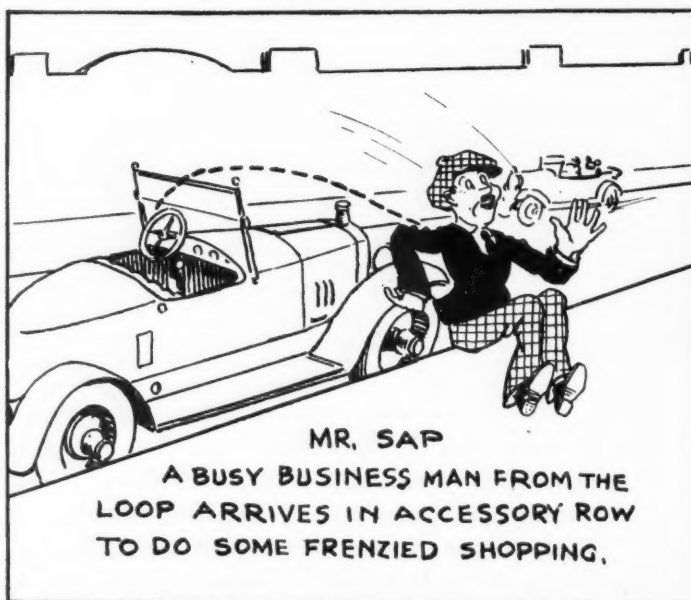
Probable

MEMPHIS, Tenn.—The Union Ave. Methodist Church, Rev. R. A. Clark, gave a special service for auto dealers recently. Choir singing under Jeff Wall of Cookville, was an added attraction.

—News Note.

The Rev. Mr. Clark probably bought a car and found out why men cuss.

Stopping Accessory Sales



Current Motor Truck Specifications

(This list comprises trucks distributed on a national basis)

| MAKE AND MODEL | Tons Capacity | Price | ENGINE | | Clutch Make | Gearset Make | REAR AXLE | | TIRES | | MAKE AND MODEL | Tons Capacity | Price | ENGINE | | Clutch Make | Gearset Make | REAR AXLE | | TIRES | |
|---------------------------|---------------|-------|--------------------------|-----------------|-------------|--------------|----------------|-------------|----------|-------|--------------------------|---------------|--------------------------|---------------------|-----------------|-------------|--------------|----------------|-------------|-------|------|
| | | | Make and Model | Bore and Stroke | | | Make and Model | Final Drive | Front | Rear | | | | Make and Model | Bore and Stroke | | | Make and Model | Final Drive | Front | Rear |
| Acme.....20 | 1 | | Co-N.....3 1/2 x 5 | B&B. | Cot..... | Ti-6250. | WO. | 34x5n | 34x5n | | Diamond T.....S5 | | | Hi-B2.....4 1/2 x 6 | B-L. | B-L. | Ti-6760. | WO. | 36x6 | 40x6d | |
| Acme.....30 | 1-1 1/2 | | Co-J4.....3 1/2 x 5 | B&B. | Cot..... | Ti-6352. | WO. | 34x3 1/2 | 34x5 | | Dodge Brothers.....3 1/2 | 2730 | Own.....3 1/2 x 4 1/2 | Own. | Own. | Own..... | SB. | 32x4n | 32x4n | | |
| Acme.....40 | 1 1/2-2 | | Co-J4.....3 1/2 x 5 | B&B. | Cot..... | Ti-6460. | WO. | 34x3 1/2 | 34x5 | | Dorris.....K21 | 2490 | Own.....4 x 5 1/2 | Own. | War. | Ti-5512. | IG. | 33x5n | 33x5n | | |
| Acme.....60 | 2 1/2-3 | | Co-K4.....4 1/2 x 5 1/2 | B&B. | Cot..... | Ti-6560. | WO. | 36x4 | 36x7 | | Dorris.....K4 | 3400 | Own.....4 1/2 x 5 1/2 | Own. | War. | Ti-6560. | WO. | 36x4 | 36x7 | | |
| Acme.....90 | 3 1/2-4 1/2 | | Co-L4.....4 1/2 x 5 1/2 | B&B. | Cot..... | Ti-6660. | WO. | 36x5 | 40x10 | | Dorris.....K7 | 4400 | Own.....4 1/2 x 5 1/2 | Own. | War. | Ti-6660. | WO. | 36x7 | 36x10 | | |
| Acme.....125 | 5-6 1/2 | | Co-B5.....4 1/2 x 6 | B&B. | Cot..... | Ti-6760. | WO. | 36x6 | 40x12 | | Dort.....109 | 685b | Ly-K.....3 1/2 x 5 | Del. | Own. | FI-105. | SB. | 31x4n | 31x4n | | |
| Amer. La France.....2 1/2 | | 3950 | Own.....4 1/2 x 6 | Own. | Own. | Own..... | DR. | 36x4 | 36x7 | | Duplex.....G1 | | Bu-WTU.....3 1/2 x 5 1/2 | B-L. | B-L. | Ti-5511. | SB. | 33x5 | 33x5n | | |
| Amer. La France.....3 | | 4950 | Own.....4 1/2 x 6 | Own. | Own. | Own..... | WO. | 36x5 | 36x5 | | Duplex.....GH | 1 1/2 | Bu-WTU.....3 1/2 x 5 1/2 | Cov. | Cov. | Sh-1501. | WO. | 35x5 | 36x6 | | |
| Amer. La France.....5 | | 5500 | Own.....4 1/2 x 6 | Own. | Own. | Own..... | WO. | 36x6 | 40x6 | | Duplex.....A2 | | Hi-400.....4 x 5 1/2 | Cov. | Cov. | Sh-103. | WO. | 35x5 1/2 | 36x7 | | |
| Armleder.....21 | 1 1/2 | 2550 | Bu-GTU.....4 x 5 1/2 | Ful. | Ful. | Ti-6460. | WO. | 34x3 1/2 | 34x6k | | Duplex.....AC | 2 1/2-3 | Hi-400.....4 x 5 1/2 | B-L. | B-L. | Vu-4..... | WO. | 34x5 | 36x8 | | |
| Armleder.....HWB | 2 1/2 | 3150 | Bu-HTU.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6560. | WO. | 36x4k | 36x4dk | | Duplex.....E3 | 3 1/2 | Bu.....4 1/2 x 5 1/2 | B-L. | B-L. | Own..... | IG. | 36x8 | 36x8 | | |
| Armleder.....HWC | 2 1/2 | 3150 | Co-C4.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6560. | WO. | 36x4k | 36x4dk | | F. W. D.....B3 | 4200 | Wi-A.....4 1/2 x 5 1/2 | H-S. | Cot. | Own..... | SP. | 36x6 | 36x6 | | |
| Armleder.....KWB | 3 1/2 | 4200 | Bu-YTU.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6666. | WO. | 36x5k | 36x5dk | | Fageol.....1 1/2 | 3000 | Wa-YA.....3 1/2 x 5 1/2 | B-L. | Own. | Ti-6461. | WO. | 34x3 1/2 | 34x6 | | |
| Armleder.....KWC | 3 1/2 | 4200 | Co-E4.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6666. | WO. | 36x5k | 36x5dk | | Fageol.....2 1/2 | 3900 | Wa-CU.....4 1/2 x 5 1/2 | B-L. | Own. | Ti-6560. | WO. | 36x4k | 36x7 | | |
| Atterbury.....20R | 1 1/2-2 | 2475 | Co-J4.....3 1/2 x 5 | Ful. | Ful. | Ti-6460. | WO. | 34x4k | 34x6k | | Fageol.....4 | 5000 | Wa-DU.....4 1/2 x 5 1/2 | B-L. | Own. | Ti-6666. | WO. | 36x5 | 36x5d | | |
| Atterbury.....22C | 2 1/2-3 | 3375b | Co-K4.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6560. | WO. | 36x4k | 36x4d | | Fageol.....6 | 5700 | Wa-DU.....4 1/2 x 5 1/2 | B-L. | Own. | Ti-6760. | WO. | 36x6 | 40x6d | | |
| Atterbury.....22D | 3 1/2-4 1/2 | 4275b | Co-L4.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6660. | WO. | 36x5 | 40x6d | | Federal.....R21 | | Co-J4.....3 1/2 x 5 | B&B. | Det. | Ti-6250. | WO. | 33x5n | 33x5n | | |
| Atterbury.....8E | 5-6 | 4975b | Co-B2.....4 1/2 x 6 | B-L. | B-L. | Ti-6760. | WO. | 36x6 | 40x7d | | Federal.....S23 | 1 1/2 | Co-J4.....3 1/2 x 5 | B&B. | Own. | Ti-6460. | WO. | 36x3 1/2 | 36x5 | | |
| Autocar.....21 | 1 1/2-2 | 2200t | Own.....4 1/2 x 6 | Own. | Own. | Own..... | DR. | 34x4 | 34x6 | | Federal.....U2 | 2 1/2 | Co-K4.....4 1/2 x 5 1/2 | B&B. | Det. | Ti-6560. | WO. | 36x4 | 36x8 | | |
| Autocar.....27 | 2-3 | 3450t | Own.....4 x 5 1/2 | Own. | Own. | Own..... | DR. | 34x5 | 36x8 | | Federal.....W2 | 3 1/2-4 | Co-L4.....4 1/2 x 5 1/2 | B&B. | War. | Ti-6660. | WO. | 36x5 | 40x5d | | |
| Autocar.....26 | 4-6 | 4650t | Own.....4 1/2 x 5 1/2 | Own. | Own. | Own..... | DR. | 34x6 | 36x12 | | Federal.....X2 | 5-6 | Co-B5.....4 1/2 x 6 | B&B. | War. | Ti-6760. | WO. | 36x6 | 40x6d | | |
| Available.....JH | 1 1/2 | 2450 | He-O.....4 x 5 | B-L. | B-L. | Ti-6460. | WO. | 36x3 1/2 | 36x5 | | Ford.....TT1 | -0 | Co-B5.....4 1/2 x 6 | B&B. | Own. | Own..... | WO. | 36x3 1/2 | 32x4 1/2 | | |
| Available.....H | 2 1/2 | 3160 | He-O.....4 x 5 | B-L. | B-L. | Ti-6560. | WO. | 36x4 | 36x8 | | G.M.C.....K16 | 1 | Own.....3 1/2 x 5 1/2 | Own. | Own. | Own..... | SB. | 34x5n | 34x5n | | |
| Available.....H5 | 3 1/2 | 4175 | He-MU3 | 4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6666. | WO. | 36x5 | 40x5d | G.M.C.....K41 | 2 | Own.....4 x 5 1/2 | Own. | Own. | Own..... | WO. | 36x4 | 36x7 | | |
| Available.....H5 | 5 | 5375 | He-T3.....5 x 6 | B-L. | B-L. | Ti-6760. | WO. | 36x6 | 40x12 | | G.M.C.....K41 | 5 | Own.....4 x 5 1/2 | Own. | Own. | Own..... | WO. | 36x4 | 36x8 | | |
| Bassemmer.....G1 | 1 1/2 | 1450 | Co-N.....3 1/2 x 5 | Ful. | Ful. | To-A..... | IG. | 35x5n | 35x5n | | G.M.C.....K71 | 3 1/2 | Own.....4 1/2 x 6 | Own. | Own. | Own..... | WO. | 36x5 | 40x5d | | |
| Bassemmer.....H2 | 1 1/2 | 1995 | Co-N.....3 1/2 x 5 | B&B. | Bak..... | LM-7150 | DR. | 36x3 1/2 | 36x5 | | G.M.C.....K71 | 10 | Own.....4 1/2 x 6 | Own. | Own. | Own..... | WO. | 36x5 | 40x12 | | |
| Bassemmer.....J2 | 2 1/2 | 2895 | Co-C2.....4 1/2 x 5 1/2 | B&B. | B-L. | LM-7250 | DR. | 36x4 | 36x4d | | G.M.C.....K101 | 15 | Own.....4 1/2 x 6 | Own. | Own. | Own..... | WO. | 36x5 | 40x6d | | |
| Bassemmer.....K2 | 4 | 3495 | Co-E7.....4 1/2 x 5 1/2 | B&B. | B-L. | To-E..... | IG. | 36x5 | 36x10 | | G.M.C.....K101 | 15 | Own.....4 1/2 x 6 | Own. | Own. | Own..... | WO. | 36x5 | 40x14 | | |
| Bethlehem.....KN1 | 1 | 1595 | Own.....3 1/2 x 5 | B&B. | Det..... | Ea-1000 | SB. | 35x5n | 35x5n | | Garford.....151 | 1590 | Bu-MU.....3 1/2 x 5 1/2 | B&B. | Own. | Ti-6250. | WO. | 34x5n | 34x5n | | |
| Bethlehem.....GN2 | 2 | 2495 | Own.....4 x 5 1/2 | B&B. | Det..... | Wi-60A. | DR. | 34x4 | 34x6 | | Garford.....25B | 1 1/2 | Bu-WU.....3 1/2 x 5 1/2 | Own. | Own. | Ti-6460. | WO. | 36x3 1/2 | 36x5 | | |
| Bethlehem.....HN3 | 3 | 3295 | Own.....4 x 5 1/2 | Ful. | Ful. | Wi-88E. | DR. | 36x4 | 36x8 | | Garford.....70H | 2 1/2 | Bu-HTU.....4 1/2 x 5 1/2 | Own. | Own. | Ti-6560. | WO. | 36x4 | 36x8 | | |
| Bridgeport.....A | 1 1/2 | | Bu.....3 1/2 x 5 1/2 | B-L. | B-L. | Tim-6460 | WO. | 34x4n | 34x6dn | | Garford.....80 | 4200 | Bu-YTU.....4 1/2 x 5 1/2 | Own. | Own. | Ti-6666. | WO. | 36x5 | 36x5d | | |
| Bridgeport.....B | 2 1/2 | | Bu.....4 1/2 x 5 1/2 | B-L. | B-L. | Tim-6560 | WO. | 36x4n | 36x8n | | Garford.....68D | 5 | Bu-BTU.....5 x 8 1/2 | Own. | Own. | Ti-6760. | WO. | 36x6 | 40x6d | | |
| Bridgeport.....C | 3 1/2 | | Bu.....4 1/2 x 5 1/2 | B-L. | B-L. | Tim-6666 | WO. | 36x6n | 36x12n | | Garford.....150A | 7 1/2 | Bu-BTU.....5 x 8 1/2 | Own. | Own. | Own..... | Ch. | 36x6 | 40x7d | | |
| Brookway.....E21 | 1 1/2 | | Wi-SU.....4 x 5 | B-L. | B-L. | Co-52001 | SB. | 33x5n | 33x5n | | Gary.....F1 | 1775 | Bu-WU.....3 1/2 x 5 1/2 | Ful. | Ful. | Ti-6352. | WO. | 36x3 1/2 | 36x5 | | |
| Brookway.....S | 1 1/2 | | Wi-SU.....4 x 5 | B-L. | B-L. | Ti-6460. | WO. | 36x4 | 36x6 | | Gary.....12 | 2450 | Bu-GTU.....4 x 5 1/2 | Ful. | Ful. | Ti-6460. | WO. | 36x3 1/2 | 36x7 | | |
| Brookway.....K | 2 1/2 | | Co-K4.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6560. | WO. | 36x4 | 36x8 | | Gary.....J2 | 2850 | Bu-HTU.....4 1/2 x 5 1/2 | Ful. | Ful. | Ti-6560. | WO. | 36x4 | 36x8 | | |
| Brookway.....R | 3 1/2 | | Co-L4.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6666. | WO. | 36x5 | 36x5d | | Gary.....JO | 2 1/2 | Bu-YTU.....4 1/2 x 5 1/2 | Ful. | Ful. | Ti-6560. | WO. | 36x6n | 40x8n | | |
| Brookway.....T | 5 | | Co-B5.....4 1/2 x 6 | B-L. | B-L. | Ti-6760. | WO. | 36x6 | 40x7d | | Gary.....K3 | 3 1/2 | Bu-YTU.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6660. | WO. | 36x5 | 40x10 | | |
| Buick.....23-4-SD | 3 1/2 | 945 | Own.....3 1/2 x 4 1/2 | Own. | Own. | Own..... | SB. | 31x4n | 31x4n | | Gary.....M5 | 4450 | Bu-BTU.....5 x 8 1/2 | B-L. | B-L. | Ti-6760. | WO. | 36x6 | 40x12 | | |
| Case.....TR | 2 | | Own.....4 1/2 x 5 1/2 | TD. | Own. | To-C139 | IG. | 36x6n | 38x7n | | Graham Bros.....1 | 1265 | Do.....3 1/2 x 4 1/2 | Dod. | Dod. | Own..... | SB. | 33x4 1/2 | 34x5n | | |
| Chevrolet.....Supr | 1 1/2 | 395 | Own.....3 1/2 x 4 1/2 | Own. | Own. | Own..... | SB. | 30x3 1/2 | 30x3 1/2 | | Graham Bros.....1 1/2 | 1325 | Do.....3 1/2 x 4 1/2 | Dod. | Dod. | Own..... | SB. | 33x4 1/2 | 34x5n | | |
| Chevrolet.....Util | 1 | 550 | Own.....3 1/2 x 4 1/2 | Own. | Own. | Own..... | SB. | 31x4n | 34x4 1/2 | | Gramm-Pion.....10 | 1245 | Ly.....3 1/2 x 5 | B&B. | B-L. | Sa-1483 | SB. | 33x5n | 33x5n | | |
| Clinton.....20 | 1-1 1/2 | 1980 | Bu-WTU.....3 1/2 x 5 1/2 | B-L. | B-L. | Ti-6250. | WO. | 34x5n | 34x5n | | Gramm-Pion.....15 | 1750 | Co-N.....3 1/2 x 5 | Ful. | Ful. | Cl-1D. | IG. | 36x3 1/2 | 36x5dk | | |
| Clinton.....45 | 1 1/2-2 | 2840 | Bu-GTU.....4 x 5 1/2 | B-L. | B-L. | Ti-6460. | WO. | 34x4 | 34x3 1/2 | | Gramm-Pion.....65 | 2250 | Co-J4.....3 1/2 x 5 | Ful. | Own. | Ea-603. | WO. | 36x3 1/2 | 36x5dk | | |
| Clinton.....65 | 2 1/2-3 | 3480 | Bu-ETU.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6560. | WO. | 36x5 | 36x5d | | Gramm-Pion.....20 | 2475 | Co-K4.....4 1/2 x 5 1/2 | Ful. | Own. | Sh-103. | WO. | 36x4k | 36x8k | | |
| Clinton.....90 | 3 1/2-4 1/2 | 4160 | Bu-YTU.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6666. | WO. | 36x6 | 36x5dk | | Gramm-Pion.....30 | 3300 | Hi-500.....4 1/2 x 5 1/2 | Own. | Own. | Sh-21. | WO. | 36x5k | 36x10k | | |
| Clinton.....120 | 5-7 | 4960 | Bu-BTU.....5 x 8 1/2 | B-L. | B-L. | Ti-6760. | WO. | 36x6 | 40x7d | | Gramm-Pion.....40 | 3850 | Hi-200.....4 1/2 x 5 1/2 | Own. | Own. | Sh-31. | WO. | 36x5k | 36x10k | | |
| Clydesdale.....10A | 1 1/2 | 1785 | Co-N.....3 1/2 x 5 | B&B. | B-L. | Ti-6250. | SB. | 34x5n | 34x5n | | Gramm-Pion.....50 | 4450 | Co-B2.....4 1/2 x 6 | Own. | Own. | Sh-51. | WO. | 36x6k | 40x6dk | | |
| Clydesdale.....8 | 2 1/2 | 2650 | Co-K4.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6460. | WO. | 36x4 | 36x7 | | Gray.....1 | 575 | Own.....3 1/2 x 4 | Own. | Det. | Ti..... | SB. | 30x3 1/2 | 32x4 1/2 | | |
| Clydesdale.....6 | 3 1/2 | 3300 | Co-L4.....4 1/2 x 5 1/2 | B-L. | B-L. | Ti-6560. | WO. | 36x5 | 36x5d | | Harvey.....WOA | 2 | Bu-ETU.....4 1/2 x 5 1/2 | Ful. | Ful. | Sh-103. | WO. | 34 | | | |

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

| MAKE AND MODEL | Tons Capacity | Price | ENGINE | | Clutch Make | Gearset Make | REAR AXLE | | TIRES | | MAKE AND MODEL | Tons Capacity | Price | ENGINE | | Clutch Make | Gearset Make | REAR AXLE | | TIRES | | |
|-------------------------|---------------|---------|----------------|-----------------|-------------|--------------|----------------|-------------|----------|-----------|--------------------|---------------|--------|----------------|-----------------|-------------|--------------|----------------|-------------|----------|----------|----------|
| | | | Make and Model | Bore and Stroke | | | Make and Model | Final Drive | Front | Rear | | | | Make and Model | Bore and Stroke | | | Make and Model | Final Drive | Front | Rear | |
| Maccar.....EX | 1 1/4 | | Wi-SU | 4 x 5 | B-L | B-L | Sa-1526 | SB | 34x5n | 34x5n | Selden.....53B | 2 1/2 | \$3550 | Co-L4 | 4 1/2 x 5 1/2 | B-L | B-L | Ti | WO | 36x4k | 36x7k | |
| Maccar.....LI | 1 1/2 | | Wi-TAU | 4 x 6 | B-L | B-L | Ti-6460 | WO | 36x4 | 36x6 | Selden.....70B | 3 1/2 | 4175 | Co-L4 | 4 1/2 x 5 1/2 | B-L | B-L | Ti | WO | 36x5k | 36x10k | |
| Maccar.....HT | 2 | | Wi-TAU | 4 x 6 | B-L | B-L | Ti-6560 | WO | 36x4 | 36x4d | Selden.....73B | 3 1/2 | 4475 | Co-B5 | 4 1/2 x 6 | B-L | B-L | Ti | WO | 36x5k | 36x10k | |
| Maccar.....H1 | 3 | | Wi-UAU | 4 1/2 x 6 | B-L | B-L | Ti-6560 | WO | 36x4 | 36x5d | Selden.....90A | 5 | 4950 | Co-B5 | 4 1/2 x 6 | Del | B-L | Ti | WO | 36x5k | 40x12 | |
| Maccar.....G1 | 4 | | Wi-UAU | 4 1/2 x 6 | B-L | B-L | Ti-6666 | WO | 36x5 | 36x6d | Service.....25 | 1 1/4 | | Bu-WTU | 3 3/4 x 5 1/2 | B-L | B-L | Ea-1000 | SB | 34x5n | 34x5n | |
| Maccar.....M2 | 5 | | Wi-RBU | 5 x 6 | B-L | B-L | Ti-6760 | WO | 36x6 | 40x6d | Service.....33 | 1 1/2 | | Bu-GBU | 4 x 5 1/2 | B&B | B-L | Ti | Ti-6352 | WO | 36x4 1/2 | 36x7 |
| MacDonald.....O | 5 | \$5500b | Bu-WTU | 3 3/4 x 5 1/2 | B-L | B-L | **Own | IG | 36x6 | 36x10 | Service.....42 | 2 | | Bu-EBU | 4 1/2 x 5 1/2 | B&B | B-L | Ti | Ti-6460 | WO | 36x4 | 36x8 |
| MacDonald.....A | 7 1/2 | 8000b | Bu-YTU | 4 1/2 x 6 | B-L | B-L | **Own | IG | 40x7 | 40x14 | Service.....61 | 3 | | Bu-EBU | 4 1/2 x 5 1/2 | B&B | B-L | Ti | Ti-6560 | WO | 36x5 | 36x10 |
| Mack.....AB | 1 1/2 | 3000 | Own | 4 x 5 | Own | Own | Own | Ch | 36x4 | 36x3 1/2d | Service.....81 | 4 | | Bu-YBU | 4 1/2 x 6 | B&B | B-L | Ti | Ti-6666 | WO | 36x6 | 40x12 |
| Mack.....AB | 1 1/2 | 3450 | Own | 4 x 5 | Own | Own | Own | Ch | 36x4 | 36x4d | Signal.....NF | 1 1/2 | | Co-J4 | 3 3/4 x 5 | B-L | B-L | Ti | Ti-6760 | WO | 36x5n | 36x6n |
| Mack.....AB | 2 | 3300 | Own | 4 1/2 x 5 | Own | Own | Own | Ch | 36x4 | 36x4d | Signal.....H | 2 1/2 | | Co-K4 | 4 1/2 x 5 1/2 | B-L | B-L | Ti | Ti-6460 | WO | 36x4 | 36x6 |
| Mack.....AB | 2 | 3750 | Own | 4 1/2 x 5 | Own | Own | Own | Ch | 36x4 | 36x4d | Signal.....J | 3 1/2 | | Co-K4 | 4 1/2 x 5 1/2 | B-L | B-L | Ti | Ti-6560 | WO | 36x4 | 36x6 |
| Mack.....AB | 2 1/2 | 3400 | Own | 4 1/2 x 5 | Own | Own | Own | Ch | 36x4 | 36x4d | Signal.....M | 5 | | Co-L4 | 4 1/2 x 5 1/2 | B-L | B-L | Ti | Ti-6666 | WO | 36x5 | 40x10 |
| Mack.....AB | 2 1/2 | 3850 | Own | 4 1/2 x 5 | Own | Own | Own | Ch | 36x4 | 40x5d | Signal.....R | 7 1/2 | | Co-B5 | 4 1/2 x 6 | B-L | B-L | Ti | Ti-6760 | WO | 36x6 | 40x12 |
| Mack.....AC | 3 | 4950 | Own | 5 x 6 | Own | Own | Own | Ch | 36x6 | 40x6d | Standard.....75 | 1 1/4 | 1330† | Co-N | 3 3/4 x 5 | B-L | B-L | Ti | Ti-6250 | WO | 33x5n | 33x5n |
| Mack.....AC | 3 | 5500 | Own | 5 x 6 | Own | Own | Own | Ch | 36x6 | 40x12 | Standard.....R | 1 1/2 | 1695 | Co-N | 3 3/4 x 5 | B-L | B-L | Ti | Ti-6352 | WO | 34x3 1/2 | 34x5 |
| Mack.....AC | 3 1/2 | 5750 | Own | 5 x 6 | Own | Own | Own | Ch | 36x7 | 40x7d | Standard.....2 1/2 | 2 1/2 | 2795 | Co-K4 | 4 1/2 x 5 1/2 | B-L | B-L | Ti | Ti-6560 | WO | 36x4 | 36x8 |
| Mack.....AC | 3 1/2 | 6000 | Own | 5 x 6 | Own | Own | Own | Ch | 36x7 | 40x7d | Standard.....3 1/2 | 3 1/2 | 3645 | Co-L4 | 4 1/2 x 5 1/2 | B-L | B-L | Ti | Ti-6666 | WO | 36x5 | 36x12 |
| Mack.....AB | 5 | 3400 | Own | 4 1/2 x 5 | Own | Own | Own | Ch | 36x5 | 40x5d | Standard.....5 | 5 | 4495 | Co-B5 | 4 1/2 x 6 | B-L | B-L | Ti | Ti-6760 | WO | 36x6 | 40x14 |
| Mack.....AC | 7 | 4950 | Own | 5 x 6 | Own | Own | Own | Ch | 36x6 | 40x6d | Star.....R | 7 1/2 | 405 | Co-Spec | 3 3/4 x 4 1/2 | Own | War | Ti | Spec | SB | 34x3 1/2 | 34x3 1/2 |
| Mack.....AC | 10 | 5500 | Own | 5 x 6 | Own | Own | Own | Ch | 36x6 | 40x12 | Sterling.....1 1/2 | 1 1/2 | 3240† | Wa-FU | 4 x 5 1/2 | B-L | B-L | Ti | Ti-6460 | WO | 36x3 1/2 | 36x5k |
| Mack.....AC | 13 | 5750 | Own | 5 x 6 | Own | Own | Own | Ch | 36x6 | 40x12 | Sterling.....2 1/2 | 2 1/2 | 3440† | Wa-FU | 4 x 5 1/2 | B-L | B-L | Ti | Ti-6560 | WO | 36x4k | 36x6k |
| Mack.....AC | 15 | 6000 | Own | 5 x 6 | Own | Own | Own | Ch | 36x7 | 40x7d | Sterling.....3 1/2 | 3 1/2 | 3700† | Wa-CU | 4 1/2 x 5 1/2 | B-L | B-L | Ti | Ti-6560 | WO | 36x4k | 36x6k |
| Mason.....He | 1 1/4 | 1295 | He | 4 x 5 | Hoo | War | FL | SB | 34x5n | 33x5n | Sterling.....5 | 5 | 4750† | Wa-DU | 4 1/2 x 5 1/2 | H-S | Own | Ti | Ti-6666 | WO | 36x5 | 40x5d |
| Master.....11 | 1 1/4 | | Bu-WTU | 3 3/4 x 5 1/2 | Ful | Ful | Ti-5511 | SB | 33x5n | 33x5n | Sterling.....6 | 6 | 5400† | Wa-EU | 5 x 6 1/2 | H-S | Own | Ti | Ti-6760 | WO | 36x6 | 40x6d |
| Master.....21 | 1 1/2 | | Bu-OU | 4 1/2 x 5 1/2 | Ful | Ful | Ti-6460 | WO | 34x4 | 34x6 | Sterling.....EHD | 5 | 6000† | Wa-EU | 5 x 6 1/2 | H-S | Own | Ch | Ch | 36x6 | 40x6d | |
| Master.....41 | 2 1/2 | | Bu-ETU | 4 1/2 x 5 1/2 | Ful | Ful | Ti-6560 | WO | 34x4 | 36x8 | Sterling.....EHD | 7 1/2 | 6500† | Wa-EU | 5 x 6 1/2 | H-S | Own | Ch | Ch | 36x6 | 40x7d | |
| Master.....51 | 3 1/2 | | Bu-YTU | 4 1/2 x 6 | B-L | B-L | Ti-6666 | WO | 36x5 | 40x10 | Stewart.....16 | 1 1/4 | 1195 | Ly-CT | 3 3/4 x 5 | | | SB | 34x4 1/2 | 34x4 1/2 | | |
| Master.....61 | 5 | | Bu-YTU | 4 1/2 x 6 | B-L | B-L | Ti-6760 | WO | 36x5 | 40x14 | Stewart.....15X | 1 1/4 | 1595 | Bu-MU | 3 3/4 x 5 1/2 | | Ful | DI-AW | IG | 35x5n | 35x5n | |
| Master.....64 | 5 - 6 | | Bu-ATU | 4 1/2 x 6 1/2 | B-L | B-L | Ti-6760 | WO | 36x6 | 40x15 | Stewart.....9 | 1 1/2 | 1970 | Co-N | 3 3/4 x 5 | | Ful | CI-1D | IG | 34x3 1/2 | 34x6k | |
| Maxwell.....1 1/2 | | 1097 | Own | 3 3/4 x 4 1/2 | Own | Own | Ti | WO | 35x5n | 35x5n | Stewart.....7K | 2 1/2 | 2690 | Bu-HTU | 4 1/2 x 5 1/2 | | Ful | CI-2D | IG | 34x4k | 34x8k | |
| Menominee.....B1 | | 1650 | Wi-SU | 4 x 5 | B&B | Det. | Co-5200 | SB | 35x5n | 35x5n | Stewart.....10X | 3 1/4 | 3590 | Bu-YTU | 4 1/2 x 6 | | Ful | CI-3D | IG | 36x5 | 36x12 | |
| Menominee.....HT | 1 1/4 | 2000 | Wi-CAU | 3 3/4 x 5 | Ful | Del | Wi-800G | WO | 34x3 1/2 | 36x5k | Stoughton.....AS | 1 1/4 | 1185 | Wi-410 | 3 3/4 x 4 1/2 | Del | Cam | Co-5200 | SB | 34x4 1/2 | 34x4 1/2 | |
| Menominee.....H1 | 1 1/2 | 2475 | Wi-EAU | 4 x 5 | Ful | Del | Wi-800H | WO | 36x3 1/2 | 36x5k | Stoughton.....AS | 1 1/4 | 2400 | Wa-BUX | 3 3/4 x 5 1/2 | B-L | B-L | Co-5200 | SB | 34x5n | 36x6n | |
| Menominee.....D2 | 2 1/2 | 2875 | Wi-TAU | 4 x 6 | Ful | Del | Wi-800J | WO | 36x4 | 36x8 | Stoughton.....B1 | 1 1/2 | 2150 | Wa-BUX | 3 3/4 x 5 1/2 | B-L | B-L | Sh-1501 | WO | 36x3 1/2 | 36x5 | |
| Menominee.....J5 | | 4850 | Wi-RAU | 4 1/2 x 6 | B&B | Det. | Ti-6760 | WO | 36x6 | 40x12 | Stoughton.....D2 | 2 | 2490† | He-CU3 | 4 1/2 x 5 1/2 | B-L | B-L | Sh-103 | WO | 36x4 | 36x7 | |
| Moline.....10 | 1 1/2 | 1695 | Own | 3 1/2 x 5 | B&B | Own | To-A | IG | 34x5n | 36x6n | Stoughton.....F3 | 3 | 3150† | Mi-402 | 4 1/2 x 5 1/2 | B-L | B-L | Sh-21 | WO | 36x5 | 36x5d | |
| Nash.....2018 | 1-1 1/2 | 1595 | Own | 3 3/4 x 5 1/2 | B&B | Det. | CI-1D | IG | 34x4 | 34x5 | Thomart.....20 | 1 1/4 | 1795 | Hi-400 | 4 x 5 1/2 | War | War | Ea-1000 | SB | 34x5n | 34x5n | |
| Nash.....4017F | 2-2 1/2 | 2750† | Bu-HU | 4 1/2 x 5 1/2 | B&B | Own | Own | IG | 36x6 | 36x6 | Tiffin.....GW | 1 1/2 | 2100† | Co-C4 | 4 1/2 x 5 1/2 | Ful | Ful | Sh-103 | WO | 36x3 1/2 | 36x5 | |
| Nash.....3018 | 2-2 1/2 | 2150† | Own | 3 3/4 x 5 1/2 | B&B | Det. | CI-2D | IG | 34x4 | 34x7 | Tiffin.....MW | 2 1/2 | 2700† | Co-C4 | 4 1/2 x 5 1/2 | Ful | Ful | Sh-21 | WO | 36x4 | 36x3 1/2 | |
| Nash.....5018 | 2 1/2 | 2250 | Own | 3 3/4 x 5 1/2 | B&B | Det. | CI-2D | IG | 34x4 | 34x7 | Tiffin.....F35 | 3 1/4 | 3600† | Co-LA | 4 1/2 x 5 1/2 | Del | Cot | Sh-31 | WO | 36x5 | 40x5d | |
| Noble.....A751 | | 1395 | Bu-WTU | 3 3/4 x 5 1/2 | Ful | Ful | CI-300 | SB | 34x4 1/2 | 34x4 1/2 | Tiffin.....TW | 5 - 6 | 4300† | Co-B2 | 4 1/2 x 6 | B&B | Cot | Sh-51 | WO | 36x6 | 40x6d | |
| Noble.....A211 | 1 1/4 | 1890 | Bu-WTU | 3 3/4 x 5 1/2 | Ful | Ful | Sh-1501 | WO | 34x5 | 34x5 | Tiffin.....UW | 6 - 7 | 4500† | Co-B2 | 4 1/2 x 6 | B&B | Cot | Sh-51 | WO | 36x6 | 40x12 | |
| Noble.....B312 | | 2695 | Bu-CTU | 3 3/4 x 5 1/2 | Ful | Ful | Sh-103 | WO | 36x4 | 36x7 | Titan.....21 | 2 1/2 | 2700 | Bu-HTU | 4 1/2 x 5 1/2 | B&B | Cot | Own | DR | 36x4 | 36x8 | |
| Noble.....D51 | 2 1/2 | 3150 | Bu-ETU | 4 1/2 x 5 1/2 | Ful | Ful | Sh-21 | WO | 36x4 | 36x8 | Titan.....31 | 3 1/2 | 3600 | Bu-YTU | 4 1/2 x 5 1/2 | B&B | Cot | Own | DR | 36x5 | 40x10 | |
| Noble.....E71 | 3 1/2 - 5 | 3850 | Bu-YTU | 4 1/2 x 6 | Ful | War | Sh-30 | WO | 36x5 | 36x10 | Titan.....5 | 5 | 4100 | Bu-YTU | 4 1/2 x 6 | B&B | Cot | Own | DR | 36x5 | 40x12 | |
| Old Reliable.....B2 | 1 1/2 | 3500 | Wi-UAU | 4 1/2 x 6 | Ful | Ful | Sh-21 | WO | 34x4 | 36x8 | Traffic.....1 1/2 | 1 1/2 | 1895 | Co-N | 3 3/4 x 5 | Cov | Cov | Ru | IG | 35x5n | 35x5n | |
| Old Reliable.....C3 | 1 1/2 | 4250 | Wi-UAU | 4 1/2 x 6 | Ful | Ful | Sh-31 | WO | 36x5 | 36x12 | Traffic.....2 | 2 | 1695 | Co-N | 3 3/4 x 5 | Cov | Cov | Ru-3000 | IG | 34x3 1/2 | 34x5 | |
| Old Reliable.....D5 | | 5000 | Wi-RAU | 4 1/2 x 6 | Own | B-L | Sh-51 | WO | 36x6 | 40x12 | Traffic.....3 | 3 | 2145 | Co-N | 3 3/4 x 5 | Cov | Cov | Ru-6000 | IG | 36x4 | 36x7 | |
| Old Reliable.....K7 1/2 | | 6000 | Wa-P | 4 1/2 x 6 | Own | Own | Ch | Ch | 36x6 | 40x14 | Transport.....15 | 1 1/2 | | Co-N | 3 3/4 x 5</ | | | | | | | |

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

CANADIAN

| MAKE AND MODEL | Tons Capacity | Price | ENGINE | | Clutch Make | Gearset Make | REAR AXLE | | TIRES | | MAKE AND MODEL | Tons Capacity | Price | ENGINE | | Clutch Make | Gearset Make | REAR AXLE | | TIRES | |
|--------------------|---------------|--------|--------------|---------------|-------------|--------------|--------------|-------------|-------|-------|----------------|---------------|--------|--------------|---------------|-------------|--------------|--------------|-------------|-------|-------|
| | | | Make & Model | Bore & Stroke | | | Make & Model | Final Drive | Front | Rear | | | | Make & Model | Bore & Stroke | | | Make & Model | Final Drive | Front | Rear |
| Getfredson... 20 | 3-1 | \$2275 | Bu-WTU | 3 1/2 x 5 1/2 | B-L | B-L | Ti-8250 | WO. | 34x5u | 34x5u | National... FA | 1 | \$2450 | Wa-BUX | 3 1/2 x 5 1/2 | B-L | B-L | Ti-6352 | WO. | 35x5u | 35x5u |
| Getfredson... 40 | 1 1/2-2 | 3290 | Bu-GTU | 4 1/2 x 5 1/2 | B-L | B-L | Ti-8400 | WO. | 36x6u | 38x7u | National... GA | 1 1/2 | 2750 | Wa-BUX | 3 1/2 x 5 1/2 | B-L | B-L | Ti-6460 | WO. | 34x4k | 34x6k |
| Getfredson... 50 | 2 1/2 | 3775 | Bu-EtU | 4 1/2 x 5 1/2 | B-L | B-L | Ti-8580 | WO. | 36x4 | 36x8 | National... HD | 2 1/2 | 3750 | Wa-CU | 4 1/2 x 5 1/2 | H-S | B-L | Ti-6560 | WO. | 36x5 | 36x10 |
| Getfredson... 80 | 4 | 4775 | Bu-YTU | 4 1/2 x 6 | B-L | B-L | Ti-8666 | WO. | 34x5 | 36x12 | National... NB | 3 1/2 | 4750 | Wa-DU | 4 1/2 x 6 | H-S | B-L | Ti-6666 | WO. | 36x6 | 36x12 |
| Getfredson... 100 | 5 | 5800 | Bu-BTU | 5 1/2 x 6 1/2 | B-L | B-L | Ti-8700 | WO. | 36x6 | 40x14 | National... OA | 5 | 6150 | Wa-EU | 5 1/2 x 6 1/2 | H-S | B-L | Ti-6700 | WO. | 36x6 | 40x14 |
| Mapleleaf... 1 1/2 | | 3000 | Hi-300 | 3 1/2 x 5 1/2 | Ful | Ful | Sh-1501 | WO. | 34x5u | 36x6u | Veteran... M | 1 1/2 | 2699 | Bu-CTU | 3 1/2 x 5 1/2 | B&B | Cot | Sh-1501 | WO. | 34x5u | 34x5u |
| Mapleleaf... AA | 2 | 3600 | Hi-400 | 4 1/2 x 5 1/2 | Ful | Ful | Sh-103 | WO. | 36x4 | 36x7 | Veteran... P | 2 | 3699 | Bu-HTU | 4 1/2 x 5 1/2 | B&B | Cot | Sh-103 | WO. | 36x4 | 36x7 |
| Mapleleaf... BB | 3 | 4050 | Hi-500 | 4 1/2 x 5 1/2 | Ful | Ful | Sh-21 | WO. | 36x4 | 36x4d | Veteran... R | 3 | 4200 | Bu-HTU | 4 1/2 x 5 1/2 | B&B | Cot | Sh-21 | WO. | 36x4 | 36x7 |
| Mapleleaf... CC | 4 | 4800 | Hi-200 | 4 1/2 x 5 1/2 | Ful | Ful | Sh-31 | WO. | 36x5 | 36x5d | Veteran... S | 4 | 5395 | Bu-YTU | 4 1/2 x 6 | B&B | Cot | Sh-31 | WO. | 36x5 | 36x10 |
| Mapleleaf... DD | 5 | 5625 | Hi-1600 | 4 1/2 x 5 1/2 | Ful | Ful | Sh-51 | WO. | 36x6 | 36x6d | | | | | | | | | | | |

Current Tractor Specifications

| MAKE & MODEL | Drawbar-Pulley Rating | Recommended No. of 14 Ins. Plovs | Price | ENGINE | | Weight (Lbs.) | Traction Members, Dimensions, Diameter & Face (Ins.) | MAKE & MODEL | Drawbar-Pulley Rating | Recommended No. of 14 Ins. Plovs | Price | ENGINE | | Weight (Lbs.) | Traction Members, Dimensions, Diameter & Face (Ins.) | MAKE & MODEL | Drawbar-Pulley Rating | Recommended No. of 14 Ins. Plovs | Price | ENGINE | | Weight (Lbs.) | Traction Members, Dimensions, Diameter & Face (Ins.) |
|---------------------------|-----------------------|----------------------------------|-------|-----------------|---------------------------|---------------|--|-------------------------|-----------------------|----------------------------------|-------|-----------------|---------------------------|---------------|--|---------------------|-----------------------|----------------------------------|-----------------|-----------------|---------------------------|---------------|--|
| | | | | Make | No. of Cyls Bore & Stroke | | | | | | | Make | No. of Cyls Bore & Stroke | | | | | | | Make | No. of Cyls Bore & Stroke | | |
| Wm. Chalmers... 6-12 | 1 | 3325 | LeR. | 4-3 1/2 x 4 1/2 | 2500 | 48 x 6 | | Gray.....EU | 22-40 | 4 | 2385 | Wau. | 4-5 x 6 1/2 | 6900 | † | Rumely OilPull. E | 30-60 | 8-10 | | Own. | 2-10x12 | 26000 | 80x30 |
| Wm. Chalmers... 15-25 | 3 | 1285 | Mid. | 4-4 1/2 x 5 1/2 | 4700 | 46x12 | | Hart-Parr.....20 | -20 | 2 | 950 | Own. | 2-5 1/2 x 6 1/2 | 4250 | 46x10 | Russell.....15-30 | 3-4 | ..... | Chi. | 4-5 x 6 1/2 | 6000 | 56x14 | |
| Wm. Chalmers... 20-35 | 4 | 1885 | Own. | 4-4 1/2 x 6 1/2 | 6150 | 50x12 | | Hart-Parr.....30 | -30 | 3 | 1295 | Own. | 2-6 1/2 x 7 | 5220 | 52x10 | Russell.....20-40 | 4-5 | ..... | Chi. | 4-5 1/2 x 7 | 7900 | 60x16 | |
| Wm. Chalmers... 30-45 | 5 | 1695 | Own. | 4-5 x 6 | 6500 | 48x14 | | Hart-Parr.....40 | -40 | 4 | 2250 | Own. | 4-6 1/2 x 6 1/2 | 7510 | 32x18 | Russell.....30-60 | 8-10 | ..... | Own. | 4-8 x 10 | 22550 | 84x22 | |
| Wm. Chalmers... 40-60 | 6 | 1495 | Own. | 4-4 x 6 | 4800 | 48x12 | | Heider.....D | 9-16 | 2 | ..... | Wau. | 4-4 1/2 x 5 1/2 | 4000 | 54 x 8 | Shaw-Enechs (Gr.) | ..... | ..... | LeR. | 4-3 1/2 x 4 1/2 | 4400 | 48 x 8 | |
| Wm. Chalmers... 50-70 | 7 | 1295 | Own. | 4-5 x 6 | 5200 | 48x12 | | Heider.....C | 12-20 | 3 | | Wau. | 4-4 1/2 x 6 1/2 | 6000 | 57x10 | Topp-Stewart...B | 30-45 | 4 | | Wau. | 4-4 1/2 x 6 1/2 | 7800 | 42x12 |
| Wm. Chalmers... 60-80 | 8 | 1900 | Chi. | 4-5 x 6 1/2 | 7800 | 70x12 | | Heider.....M-2 | 5-10 | ..... | LeR. | 4-3 1/2 x 4 1/2 | 2800 | 46 x 6 | Toro.....6-10 | 2 | \$675 | LeR. | 4-3 1/2 x 4 1/2 | 2900 | 41 x 9 | | |
| Wm. Chalmers... 70-90 | 9 | 3100 | Own. | 4-5 1/2 x 8 | 12500 | 70x20 | | Huber.....(Light 4) | 12-25 | 3 | 985 | Wau. | 4-4 1/2 x 5 1/2 | 5000 | 60x10 | Townsend.....10-20 | 2-3 | 800 | Own. | 2-6 1/2 x 7 | 4500 | 48x12 | |
| Wm. Chalmers... 80-100 | 10 | 4400 | Own. | 4-7 x 9 | 22500 | 90x24 | | Huber.....(Super 4) | 15-30 | 3 | 1885 | Mid. | 4-4 1/2 x 6 | 6000 | 60x10 | Townsend.....15-30 | 3-4 | 1350 | Own. | 2-7 x 8 | 6500 | 56x18 | |
| Wm. Chalmers... 100-120 | 11 | 3-4 | Own. | 4-4 x 6 | 4750 | 50x12 | | Lauson.....S | 12-25 | 3 | 1295 | Mid. | 4-4 1/2 x 5 1/2 | 4200 | | Townsend.....25-50 | 4-8 | 2250 | Own. | 2-8 1/2 x 10 | 11500 | 60x24 | |
| Wm. Chalmers... 120-150 | 12 | 4-5 | Own. | 4-4 x 7 | 7500 | 60x16 | | Lauson.....T | 15-30 | 4 | 1675 | Bea. | 4-4 1/2 x 6 | 6200 | | Traylor.....6-12 | 1 | 500 | LeR. | 4-3 1/2 x 4 1/2 | 1750 | 38x10 | |
| Wm. Chalmers... 150-200 | 13 | 4-6 | Own. | 4-6 x 7 | 12500 | 69x20 | | Leader.....B | 12-18 | 2 | 685 | Own. | 2-6 1/2 x 8 | 4800 | 50x12 | Twin City.....12-20 | 3 | 1200 | Own. | 4-4 1/2 x 6 | 4700 | 50x12 | |
| Wm. Chalmers... 200-250 | 14 | 4-7 | Own. | 4-7 x 8 | 22000 | 87 1/2 x 24 | | Leader.....N | 16-22 | 3-4 | 1725 | Chi. | 4-5 x 6 | 5800 | 52x12 | Twin City.....20-35 | 5 | 2750 | Own. | 4-5 1/2 x 6 1/2 | 6000 | 60x20 | |
| Wm. Chalmers... 250-300 | 15 | 4-8 | Own. | 4-4 x 5 1/2 | 5000 | x 8 1/2 | | Lincoln.....A | 15-30 | 3 | 1600 | Bud. | 4-4 1/2 x 6 | 5000 | 40x14 | Twin City.....40-65 | 8 | 4750 | Own. | 4-7 1/2 x 9 | 23700 | 84x24 | |
| Wm. Chalmers... 300-350 | 16 | 4-9 | Own. | 6-3 x 4 | 4600 | 42x 6 | | Little Giant...B | 16-22 | 4 | 1000 | Own. | 4-4 1/2 x 5 | 5200 | 54x14 | Uncle Sam...C-20 | 2-3 | ..... | Her. | 4-4 x 5 | 3000 | 46x12 | |
| Wm. Chalmers... 350-400 | 17 | 4-10 | Mid. | 4-4 1/2 x 5 1/2 | 3600 | 48x10 | | Little Giant...A | 26-35 | 6 | 1500 | Own. | 4-5 1/2 x 8 | 6600 | 66x20 | Uncle Sam...B-19 | 20-30 | 3-4 | | Bea. | 4-4 1/2 x 6 | 4650 | 50x12 |
| Wm. Chalmers... 400-450 | 18 | 4-11 | Mid. | 4-4 x 5 1/2 | 4850 | 56x10 | | Lombard.....100 | 12-16 | | | Own. | 6-5 1/2 x 7 | 19000 | x12 | Uncle Sam...D-21 | 20-30 | 3-4 | | Bea. | 4-4 1/2 x 6 | 4600 | 50x12 |
| Wm. Chalmers... 450-500 | 19 | 4-12 | Mid. | 4-4 x 6 | 6500 | 56x10 | | London.....12-25 | 3 |  | ..... | Mid. | 4-4 1/2 x 5 1/2 | 48x12 | Wallis.....OK | 15-27 | 3 | ..... | Own. | 4-4 1/2 x 5 1/2 | 3660 | 48x12 | |
| Wm. Chalmers... 500-550 | 20 | 4-13 | Own. | 4-4 x 6 1/2 | 8100 | 68x11 1/2 | | McCork-Deering...10-20 | 2 | 850 | Own. | 4-4 1/2 x 5 | 3700 | 42x12 | Waterloo Boy...N | 12-25 | 3 | ..... | Own. | 2-6 1/2 x 7 | 5890 | 52x12 | |
| Wm. Chalmers... 550-600 | 21 | 4-14 | Own. | 4-4 x 6 1/2 | 8580 | 80x20 | | McCork-Deering...15-30 | 3 | 1250 | Own. | 4-4 1/2 x 6 | 5750 | 50x12 | Wisconsin.....16-30 | 3-4 | 1750 | Chi. | 4-5 x 6 1/2 | 5600 | 52x12 | | |
| Wm. Chalmers... 600-650 | 22 | 4-15 | Own. | 4-4 x 6 1/2 | 5500 | 52x12 | | Minneapolis...12-25 | 3 | ..... | Own. | 4-4 1/2 x 7 | 6600 | 56x12 | Wisconsin.....22-40 | 4-5 | 2550 | Chi. | 4-5 1/2 x 6 1/2 | 7500 | 52x12 | | |
| Wm. Chalmers... 650-700 | 23 | 4-16 | Own. | 4-4 x 6 1/2 | 4230 | 42x12 | | Minneapolis...17-30 | 3-4 | ..... | Own. | 4-4 x 7 | 6400 | 54x12 | Yuba... (Ball Tread) | 15-25 | 4 | 2750 | Wia. | 4-4 1/2 x 6 | 5750 | 36x12 | |
| Wm. Chalmers... 700-750 | 24 | 4-17 | Own. | 4-4 x 6 1/2 | 6000 | 52x14 | | Minneapolis...22-44 | 4-5 | ..... | Own. | 4-6 x 7 | 12410 | 62x20 | Yuba... (Ball Tread) | 25-40 | 8 | 4500 | Own. | 4-5 1/2 x 7 | 10130 | 48x17 | |
| Wm. Chalmers... 750-800 | 25 | 4-18 | Own. | 4-4 x 6 1/2 | 6600 | 52x14 | | Minneapolis...35-70 | 8-10 | ..... | Own. | 4-7 1/2 x 9 | 22500 | 85x30 | | | | | | | | | |
| Wm. Chalmers... 800-850 | 26 | 4-19 | Own. | 4-4 x 6 1/2 | 4000 | | | Moline (Un.)...D | 9-18 | 2-3 | 725 | Own. | 4-3 1/2 x 5 | 3380 | 52x 8 | Aro.....F | 3-6 | 1 | \$385 | Own. | 1-14 x 5 | 1000 | 30x 4 |
| Wm. Chalmers... 850-900 | 27 | 4-20 | Own. | 4-4 x 6 1/2 | 9400 | | | Moline (Orc.)...D | 9-18 | 2-3 | 725 | Own. | 4-3 1/2 x 5 | 3340 | 44 x 8 | Beeman.....Jr. | 1 1/2-1 | | 195 | B&S. | 1-2 1/2 x 2 1/2 | 210 | 30x 3 |
| Wm. Chalmers... 900-950 | 28 | 4-21 | Own. | 4-4 x 6 1/2 | 3455 | 48x 8 | | Monarch.....C | 30-30 | 4 | 3800 | Bea. | 4-4 1/2 x 8 | 8700 | 66x12 | Beeman.....K | 1 1/2-4 | | 265 | Own. | 1-3 1/2 x 4 1/2 | 550 | 25x 3 1/2 |
| Wm. Chalmers... 950-1000 | 29 | 4-22 | Own. | 4-4 x 6 1/2 | 5850 | 48x12 | | Monarch.....E | 25-40 | | 5000 | Bea. | 4-4 1/2 x 8 | 12000 | 67x12 | Bolens.....1923 | 2 1/2-5 | 1 | 180 | B&S. | 1-2 1/2 x 2 1/2 | 200 | 16x 3 |
| Wm. Chalmers... 1000-1050 | 30 | 4-23 | Own. | 4-4 x 6 1/2 | 7100 | 48x12 | | Monarch.....D | 35-60 | | 6000 | Bea. | 4-4 1/2 x 8 | 15000 | 89x12 | Centaur.....1923 | 2 1/2-5 | 1 | 345 | N-W. | 1-4 1/2 x 4 1/2 | 800 | 28x 4 |
| Wm. Chalmers... 1050-1100 | 31 | 4-24 | Own. | 4-4 x 6 1/2 | 5450 | 54x12 | | Nichols-Shepard...20-42 | 4-6 | 2600 | Own. | 2-8 x 10 | 13500 | 64x20 | Do-It-All... (Jack) | 2 1/2-6 | 1 | 395 | Own. | 1-3 1/2 x 3 1/2 | 750 | | |
| Wm. Chalmers... 1100-1150 | 32 | 4-25 | Own. | 4-4 x 6 1/2 | 6000 | 60x12 | | Nichols-Shepard...25-50 | 6-8 | 3320 | Own. | 2-9 x 12 | 20500 | 69x28 | Do-It-All... (Baby) | 2 1/2-6 | 1 | 495 | Own. | 1-4 1/2 x 5 | 1800 | 26x 2 1/2 | |
| Wm. Chalmers... 1150-1200 | 33 | 4-26 | Own. | 4-4 x 6 1/2 | 6000 | 60x12 | | Nichols-Shepard...35-70 | 8-12 | 4030 | Own. | 2-10 x 14 | 30500 | 73x32 | Do-It-All... (Twin) | 2 1/2-6 | 1 | 495 | Own. | 2-3 1/2 x 3 1/2 | 500 | 32x 4 | |
| Wm. Chalmers... 1200-1250 | 34 | 4-27 | Own. | 4-4 x 6 1/2 | 9400 | 78x16 | | Pioneer.....G | 18-36 | 4 | | Own. | 4-5 1/2 x 6 | 6500 | 60x18 | Kinkade.....1 1/2-3 | 1 | | 190 | Own. | 1-3 x 3 | 180 | 22x 5 1/2 |
| Wm. Chalmers... 1250-1300 | 35 | 4-28 | Own. | 4-4 x 6 1/2 | 3600 | 48x 8 | | Pioneer.....C | 40-75 | 10 | | Own. | 4-7 x 8 | 24000 | 96x24 | M.B.M. Red...E | 1 1/2-3 | 1 | 250 | Own. | 1-3 1/2 x 4 | 410 | 20x 3 |
| Wm. Chalmers... 1300-1350 | 36 | 4-29 | Own. | 4-4 x 6 1/2 | 2562 | 42x12 | | Rumely OilPull. K | 12-20 | 3 | | Own. | 2-6 x 8 | 6638 | 51x12 | Motor Macultrator | 2 | 0 | 148 | Own. | 1-2 1/2 x 3 | 210 | 19x3 |
| Wm. Chalmers... 1350-1400 | 37 | 4-30 | Own. | 4-4 x 6 1/2 | 5800 | 60x10 | | Rumely OilPull. L | 16-30 | 4 | | Own. | 2-7 x 8 1/2 | 9566 | 56x16 | N.B..... | 2 | 0 | 375 | Own. | 2-2 1/2 x 4 | 750 | 32x 4 |
| Wm. Chalmers... 1400-1450 | 38 | 4-31 | Own. | 4-4 x 6 1/2 | 6730 | 60x12 | | Rumely OilPull. G | 20-40 | 6 | | Own. | 2-8 x 10 | 12968 | 64x20 | Utilitor.....501 | 2 1/2-4 | 1 | 295 | Own. | 1-3 1/2 x 4 1/2 | 750 | 24 1/2 x 3 |
| Wm. Chalmers... 1450-1500 | 39 | 4-32 | Own. | 4-4 x 6 1/2 | 6730 | 60x12 | | | | | | | | | | Utilitor.....501A | 2 1/2-4 | 1 | 340 | Own. | 1-3 1/2 x 4 1/2 | 925 | 24 1/2 x 3 |

GARDEN TRACTORS

| | |
|----------|-----|
| Aro... F | 3-6 |
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Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

| PRICES | | | | | | Wheel Base (Ins.) | Tire Size (Ins.) | NAME AND MODEL | ENGINE | | | | ELECTRICAL SYSTEM | | Clutch: Type and Make | Gearset: Make | Universal: Type and Make | REAR AXLE | | BRAKES, Service and Emergency | | |
|-------------|-----------|-----------|---------------|-----------|-----------|-------------------|------------------|----------------------|-----------------------|------------------------------|-------------------------------|-----------------|----------------------------|---------------|-----------------------|---------------|--------------------------|---------------|------------|-------------------------------|------|------|
| OPEN MODELS | | | CLOSED MODELS | | | | | | Make and Model | No. of Cyls. Bore and Stroke | Horse Power Rating (N.A.A.C.) | Carburetor Make | Generator and Starter Make | Ignition Make | | | | Type and Make | Gear Ratio | | | |
| Pass. | 4-5 Pass. | 6-7 Pass. | Sport Models | 2-3 Pass. | 4-5 Pass. | 5-7 Pass. | | | | | | | | | | | | | | | | |
| 1950 | \$1695 | \$1760 | \$1885d | \$1445c | \$2195† | \$2550 | 127 | 33x4½ | American.....D-66 | H-S.....91 | 6-3½x5 | 29.40 | Strom... | G-D.... | A-K.... | s-p B&B. | War.... | m Hart. | F Salis | 5.10 | R-40 | |
| | 1195 | | 1445c | \$1425 | 1495 | d1895p | 115 | 32x4* | Anderson.....41 | Cont.. 7 U | 6-3½x4½ | 23.44 | Zenith. | West.... | West.... | s-p B&B. | Durston. | f Good. | ½F Salis | 5.75 | R-40 | |
| | | 1595 | | | 1695 | | 122 | 32x4* | Anderson.....50 | Cont.. 8 R | 6-3½x4½ | 27.34 | Zenith. | Remy.. | Remy.. | s-p B&B. | Durston. | f Good. | ¾F Salis | 4.50 | R-40 | |
| | 1395 | | 1600d | | 1995 | p2195d | 120 | 32x4* | Apperson.....6 | Falls T8000 | 6-3½x4½ | 23.44 | Strom... | Remy.. | Remy.. | s-p Rock. | Mech.... | m Thie.. | ½F Col. | 5.10 | R-40 | |
| | 2485 | 2535 | | 3485 | 3585 | 130 | 33x5 | Apperson.....8 | Own..... | 8-3½x5 | 33.80 | Johnson. | Bijur.. | Remy.. | m-d Own. | Own.... | m Thie.. | ½F Own | 4.25 | R-40 | | |
| | 1095 | d1295p | 1365d | 1695d | 1595 | 1845d | 114 | 31x4* | Auburn.....6-43 | Cont.. 7 U | 6-3½x4½ | 23.44 | Strom... | Remy.. | Remy.. | s-p B&B. | Warner.. | m Univ.. | ½F Col. | 4.63 | R-40 | |
| | 1695 | | 1935d | | 2245† | 2445 | 122 | 32x4½ | Auburn.....6-63 | Own..... | 6-3½x5 | 25.35 | Strom... | Remy.. | Remy.. | s-p B&B. | Warner.. | m Thie.. | ½F Col. | 4.65 | R-40 | |
| | | | | | | | 124 | | | | | | | | | | | | | | | |
| | 1395 | | 1495d | 1685d | 1850 | | 118 | 32x4 | Barley.....6-50 | H-S....40 | 6-3½x5 | 25.35 | Strom... | Delco.. | Delco.. | s-p B&B. | Fuller... | f M&E. | ¾F Col. | 5.10 | R-40 | |
| | | | | | 2250p | | | | | | | | | | | | | | | | | |
| 935 | 965 | | 800g | 1395c | 1495 | | 109 | 31x4 | Buick.....1924 | Own..... | 4-3½x4½ | 18.23 | Marvel. | Delco.. | Delco.. | m-d Own. | Own.... | m Own.. | ¾F Own | 4.66 | R-40 | |
| 1275 | 1295 | | 1135g | 1995c | 1695 | | 120 | 32x4 | Buick.....1924 | Own..... | 6-3½x4½ | 27.34 | Marvel. | Delco.. | Delco.. | m-d Own. | Own.... | m Own.. | F Own | 4.10 | R-40 | |
| | | | | | 2095 | | | | | | | | | | | | | | | | | |
| 1385g | | 1565 | 1675a | 1945c | 2235† | 2285 | 128 | 32x4½ | Buick.....1924 | Own..... | 6-3½x4½ | 27.34 | Marvel. | Delco.. | Delco.. | m-d Own. | Own.... | m Own.. | F Own | 4.70 | R-40 | |
| | | | 1725d | | 2385d | 2795† | | | | | | | | | | | | | | | | |
| 3085 | 3085 | 3085 | | 3875 | 3950 | 3585 | 132 | 33x5 | Cadillac.....V 63 | Own..... | 8-3½x5½ | 31.25 | Own.... | Delco.. | Delco.. | m-d Own. | Own.... | m Spicer | F Tim | 4.50 | R-40 | |
| | | | | 3275c | 4150 | 4600s | | | | | | | | | | | | | | | | |
| 1750 | 1790 | | 2230d | 2480c | 2575 | | 122 | 32x4½ | Case.....X | Cont.. 8 R | 6-3½x4½ | 27.34 | Schebler. | Delco.. | Delco.. | m-d Own. | Own.... | f Sneed | ½F Col. | 4.90 | R-40 | |
| | | 2475 | | | 3325 | 132 | 33x5 | Case.....Y | Cont.. 6 T | 6-3½x5½ | 31.54 | Rayfield. | Delco.. | Delco.. | m-d Own. | Own.... | f Sneed | ½F Col. | 4.70 | R-40 | | |
| | 1185 | | 1335d | | 1535 | 117 | 32x4 | Chalmers.....6 | Own..... | 6-3½x4½ | 25.35 | Strom... | A-L.... | A-L.... | s-p Mech. | Warner.. | m Mech. | ½F Tim | 5.13 | R-40 | | |
| | 1295 | | | | 2095 | 122 | 32x4½ | Chalmers.....6 | Own..... | 6-3½x4½ | 25.35 | Strom... | A-L.... | A-L.... | s-p Mech. | Warner.. | m Mech. | ½F Tim | 5.13 | R-40 | | |
| 1635 | 1485 | 1635 | 1785c | 1895d | 1745 | 2385 | 123 | 32x4* | Chandler.....Six | Own..... | 6-3½x5 | 29.40 | Strom... | Bosch.. | Bosch.. | s-p B&B. | Own.... | m Own.. | F Own | 4.45 | R-40 | |
| | 1685 | | | 2095f | 2095 | 2995f | | | | | | | | | | | | | | | | |
| 490 | 495 | 395g | | 640 | 795 | 725c | 103 | 30x3½ | Chevrolet...Superior | Own..... | 4-3½x4 | 21.76 | Zenith. | Remy.. | Remy.. | e Own.. | Own.... | m Own.. | ½F Own | 3.77 | R-40 | |
| | | | | | | | | | | | | | Holley. | A-L.... | | | | | | | | |
| 1525 | 1335 | 1395d | | d1795† | 1625 | 1895d | | 29x4½ | Chrysler.....Six | Own..... | 6-3 4½ | 21.60 | Ball&B. | Remy.. | Remy.. | m-d Own. | Own.... | m Detr.. | ½F Own | 4.60 | R-40 | |
| 1085 | 1045 | | 1145d | 1245 | 1295 | 1495d | 112½ | 31x4* | Cleveland.....42 | Own..... | 6-3½x4½ | 22.50 | Strom... | Bosch.. | Bosch.. | s-p B&B. | Own.... | m Mech. | ½F Own | 4.90 | R-40 | |
| | | | 1295d | 1345 | 1395 | | | | | | | | | | | | | | | | | |
| 2175 | 2175 | 2175 | 2475c | 2750c | 3075 | d3075† | 127½ | 33x5* | Cole.....Master | Nort.. 311 | 8-3½x4½ | 39.20 | Johnson. | Delco.. | Delco.. | m-d Nort. | Nort.... | m Spicer | F Col. | 4.70 | R-40 | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | 1095 | | 1195d | 1295 | 1575 | 1775d | 115 | 31x4* | Columbia...Light Six | Cont.. 7 U | 6-3½x4½ | 23.44 | Strom... | A-L.... | A-L.... | s-p B&B. | Durston. | m Spicer | ½F Tim | 4.80 | R-40 | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | 3100 | 3100 | | | 4500 | 138 | 33x4½ | Crawford...23-6-70 | Cont.. 6 T | 6-3½x5½ | 31.54 | Zenith. | West.... | Bosch.. | m-d B-L. | B-L.... | m Spicer | ½F Tim | | R-40 | | |
| | | | 3500c | | 4500 | 138 | 33x5 | Crawf'd-Dagmar. 6-70 | Cont.. 6 T | 6-3½x5½ | 31.54 | Zenith. | West.... | Bosch.. | m-d B-L. | B-L.... | m Spicer | ½F Tim | | R-40 | | |
| | 5800 | 6300 | | | 7650 | 132 | 33x5 | Cunningham..V4 | Own..... | 8-3½x5 | 45.00 | Strom... | Delco.. | Delco.. | m-d Own. | Own.... | f Sneed | F Tim | 4.23 | R-40 | | |
| | | | | | | 142 | | | | | | | | | | | | | | | | |
| 1395 | 1395 | | 1495d | 1595d | 1895 | 1995d | 115 | 31x4* | Davis.....71 | Cont.. 7 U | 6-3½x4½ | 23.44 | Strom... | Delco.. | Delco.. | s-p B&B. | Warner.. | m Peters | ½F Tim | 5.10 | R-40 | |
| 1695 | 1645 | | | | 2195 | 2295d | 118 | 31x4 | Davis.....81 | Cont.. 8 R | 6-3½x4½ | 27.34 | Strom... | Delco.. | Delco.. | s-p B&B. | Warner.. | m Peters | ½F Tim | 5.10 | R-40 | |
| 865 | 895 | | 1055d | 1035 | 1250 | 1545d | 116 | 32x4* | Dodge Brothers | Own..... | 4-3½x4½ | 24.03 | Stewart. | N.E.... | N.E.... | m-d Own. | Own.... | m Own.. | ½F Own | 4.54 | R-40 | |
| | | | 1025b | | 1385 | 1535c | | | | | | | | | | | | | | | | |
| | 3950 | 3950 | 4150c | 4985c | 5550 | 5800 | 136 | 32x6 | Dorris.....6-80 | Own..... | 6-4 x5 | 38.40 | Strom... | West.... | Bosch.. | m-d Own. | B-L.... | m Spicer | ½F Tim | 3.77 | R-40 | |
| | 1095 | | 1215c | 1385d | 1595 | d1535† | 115 | 31x4* | Dort.....27 | Falls T8000 | 6-3½x4½ | 23.41 | Carter.. | Bosch.. | Bosch.. | m-d Detr. | Own.... | m Ther.. | ½F Fln. | 4.66 | R-40 | |
| 6500 | 6250 | 6750 | 6500c | d7800† | 7500 | 7800 | 134 | 33x5 | Duesenberg Straight 8 | Own..... | 8-2½x5 | 26.45 | Strom... | Delco.. | Delco.. | s-p Own. | Own.... | f Chi.. | ½F Own | 4.90 | R-40 | |
| 1990 | 1990 | | | 2950 | 2950 | 124 | 32x4½ | DuPont.....C | H-S....90 | 6-3½x5 | 29.40 | Strom... | West.... | West.... | m-d B-L. | B-L.... | m Spicer | F Col. | | R-40 | | |
| 1040 | 890 | | 1065d | 1035 | 1365 | 1185d | 109 | 31x4 | Durant.....A-22 | Cont. Spec. | 4-3½x4½ | 24.03 | Tillotson | A-L.... | A-L.... | s-p Own. | Warner.. | m Spicer | ¾F Ad. | 4.33 | R-40 | |
| | | | | 1465 | | | | | | | | | | | | | | | | | | |
| | 995 | | 1195d | 1425d | 1265† | d1625d | 112 | 31x4* | Elcar.....4-40 | Lyc..CF | 4-3½x5 | 21.03 | Zenith. | Delco.. | Delco.. | s-p B&B. | Warner.. | m Mech. | ½F Salis | 4.70 | R-40 | |
| | 1220 | | 1420 | p1850d | 1650 | 1490† | 113 | 31x4 | Elcar.....6-50 | Cont.. 7 U | 6-3½x4½ | 23.44 | Strom... | A-L.... | A-L.... | s-p B&B. | Warner.. | m Mech. | ½F Salis | 4.70 | R-40 | |
| | 1395 | | 1595d | 1995d | 1995 | p2195d | 118 | 32x4* | Elcar.....6-60 | Cont.. 8 R | 6-3½x4½ | 27.34 | Strom... | Delco.. | Delco.. | s-p B&B. | Warner.. | m Hart. | ¾F Salis | 4.70 | R-40 | |
| | 1895 | | | 2145 | 2345 | d3000† | 118 | 32x4½ | Elgin.....25 | Falls T8000 | 6-3½x4½ | 23.44 | Strom... | DeJon.. | DeJon.. | s-p B&B. | Warner.. | f Sneed | ½F Col. | 4.66 | R-40 | |
| | 850 | | | | 975 | | 110½ | 31x3½ | Essex.....6 | Own..... | 6-2½x4 | 16.54 | Stewart. | Bosch.. | Bosch.. | m-d Own. | Own.... | m Spicer | ½F Own | 5.40 | R-40 | |
| | | | | | | | | | | | | | | | | | | | | | | |
| | 980 | | 1695d | 1630b | 2095c | 2185 | 115 | 30x4.4 | Flint.....40 | Cont. Spec. | 6-3½x4½ | 23.44 | Till. | A-L.... | A-L.... | s-p | Warner.. | m Spicer | ½F Ad. | 4.77 | R-40 | |
| 1395 | 1395 | p1695d | 1630b | 2095c | 2185 | | 120 | 32x4* | Flint.....40 | Cont. Spec. | 6-3½x5 | 27.34 | Strom... | DeJon.. | DeJon.. | s-p Own. | Warner.. | m Spicer | ½F Ad. | | R-40 | |
| 265r | 295g | 230g | | | 525 | 685 | 100 | 30x3½ | Ford.....T | Own..... | 4-3½x4 | 22.50 | Own.. | Own.. | m-d Own. | Own.... | m Own.. | ¾F Own | 3.63 | T-40 | | |
| | | | | | | | | | | | | | Holley. | | | | | | | | | |
| | 1950 | | 2750c | 2250 | 2950d | 115 | 32x4½ | Franklin.....10-B | Own..... | 6-3½x4 | 25.35 | Own.. | A.K.... | A-K.... | s-p M&E. | Own.... | m Spicer | F Own | 4.73 | T-40 | | |
| | | | 2850† | 2850 | | | | | | | | | | | | | | | | | | |
| | 945 | 995 | 1045d | 1145d | 1445 | 1195 | 1345† | 112 | 32x4 | Gardner.....Series 5 | Lyc..Spec. | 4-3½x5 | 21.76 | Zenith. | West.... | West.... | s-p B&B. | Mech.... | m Peters | ¾F Fln. | 4.80 | R-40 |
| | | 630 | | 1135a | 1565 | | | | | | | | | | | | | | | | | |
| </ | | | | | | | | | | | | | | | | | | | | | | |

Power - Harmonized!



THE builders of the Cadillac have always endeavored to be scrupulously conservative in reciting its merits.

But they would be carrying conservatism to extreme lengths if they failed to point out how widely the margin of Cadillac leadership has been increased by the vital improvements incorporated in the New V-63, and particularly in its 90° V-Type eight-cylinder engine.

What Cadillac engineers have done in the V-63 is to introduce entirely new principles of motor design.

Due to the unique construction of its compensated crankshaft the V-63 engine is perfectly and inherently balanced. The crankshaft, with its throws in two planes, and with four compensating weights, is so designed that the forces which have a tendency to produce vibration are opposed, thus cancelling each other at all engine speeds.

The 90 degree included angle between the cylinder blocks is of course retained in the V-63 engine, as it allows an even spacing of power impulses which is not possible in V-Type engines where the included angle is more or less than 90 degrees.

The effect of the compensated crankshaft, found only in the new Cadillac, is to eliminate all perceptible vibration and to harmonize and balance the V-63 engine to a degree of smoothness and quietness unequalled in European or American manufacture.

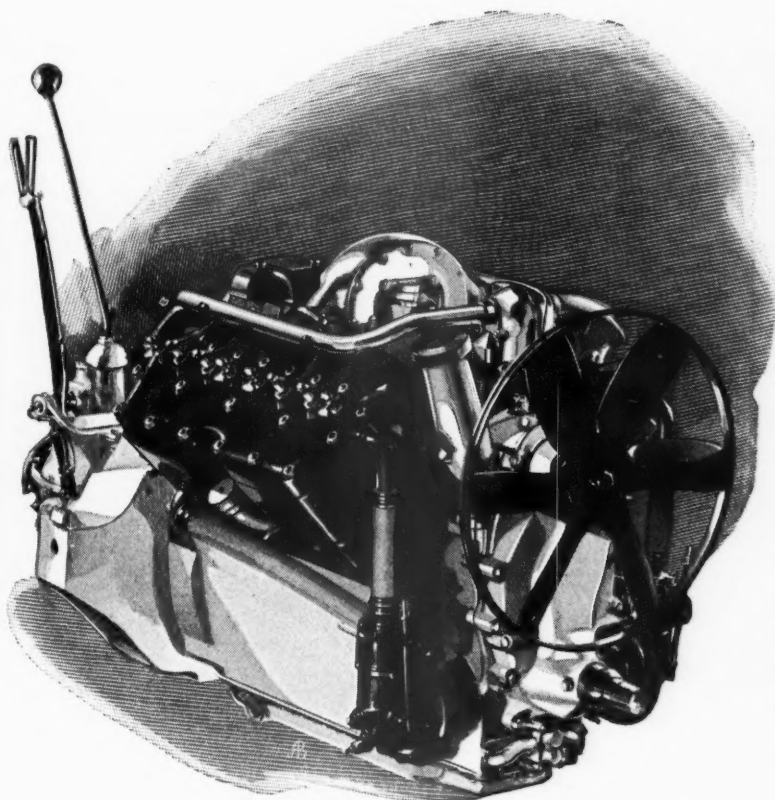
It would be unfair to prospective buyers to understate the facts.—The new Cadillac's superior balance, its greater smoothness and quietness, have been fully established by tests conducted both by Cadillac and disinterested authorities.

Owners, who have driven the car at all speeds, say they are scarcely aware of the motor's presence, so silently, evenly and steadily does it function.

As performance of this character has long been the goal of automotive engineers, the importance of the new harmonized and balanced 90° V-Type eight-cylinder engine can scarcely be overestimated.

It is, in the fullest sense, an engineering achievement, and its obvious results are higher operating efficiency, more pronounced smoothness, greater resistance to wear, and even longer life than have been hitherto possible.

CADILLAC MOTOR CAR COMPANY
Division of General Motors Corporation



STANDARD OF THE WORLD

CADILLAC



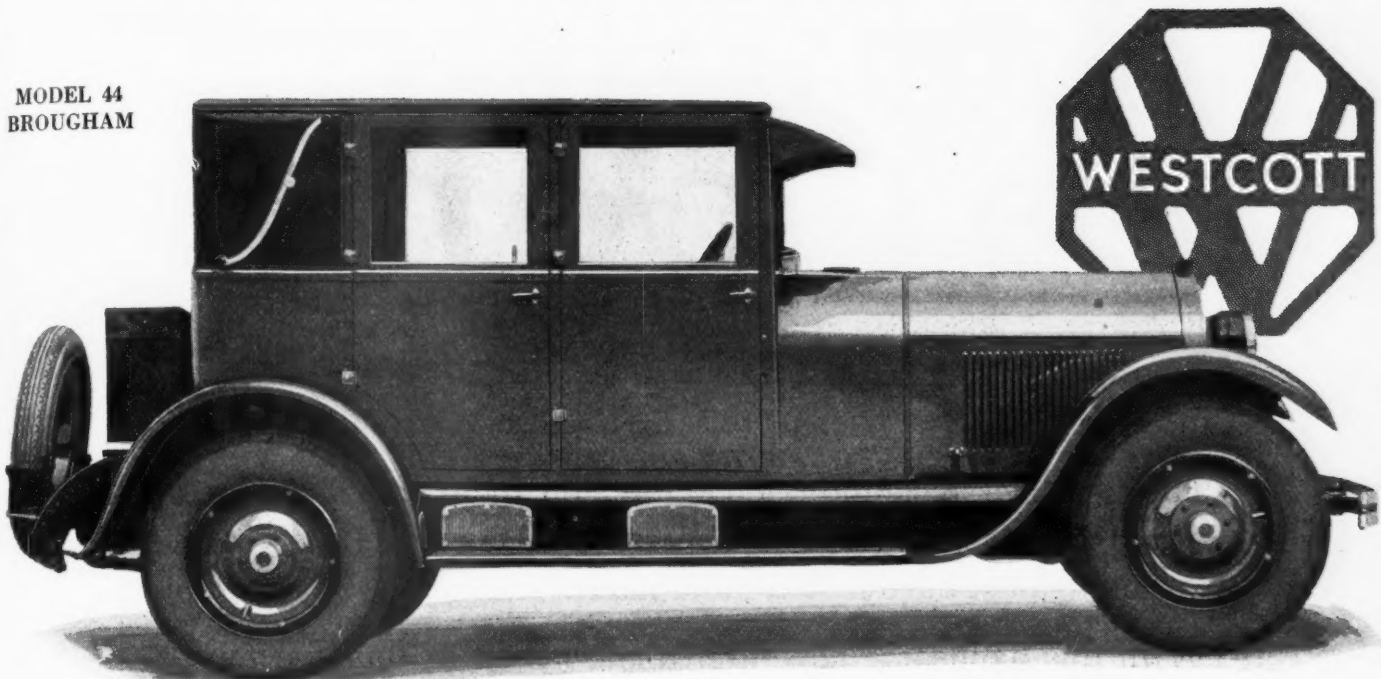
Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

| PRICES | | | | | | Wheel Base (Ins.) | Tire Size (Ins.) | NAME AND MODEL | Make and Model | ENGINE | | | ELECTRICAL SYSTEM | | Clutch Type and Make | Gearset: Make | Universal: Type and Make | REAR AXLE | | BRAKES, Service and Emergency | | |
|-------------|-----------|-----------|---------------|-----------|-----------|-------------------|------------------|----------------|-----------------|------------------------------|-------------------------------|-----------------|----------------------------|---------------|----------------------|---------------|--------------------------|---------------|-------------|-------------------------------|------|-----|
| OPEN MODELS | | | CLOSED MODELS | | | | | | | No. of Cyls. Bore and Stroke | Horse Power Rating (N.A.A.C.) | Carburetor Make | Generator and Starter Make | Ignition Make | | | | Type and Make | Gear Ratio | | | |
| 2-3 Pass. | 4-5 Pass. | 6-7 Pass. | 2-3 Pass. | 4-5 Pass. | 6-7 Pass. | | | | | | | | | | | | | | | | | |
| \$3250 | \$3250 | \$3250 | | \$4300c | \$4400 | \$4700 | 132 | 33x5* | LaFayette | Own | 8-3 1/4 x 5 1/4 | 33.80 | Johnson | Delco | Delco | m-d Own | Own | m Own | F Std. | 4.58 | R-R | |
| 1895 | 1895 | 1895 | 2145d | 2395f | 2295 | | 119 | 32x4* | Lexington | Ansted-M. | 6-3 1/2 x 4 1/2 | 26.30 | Rayfield | G-D | Conn. | s-p Long. | Warner | f Sneed | 1/2 F Salis | 5.10 | R-T | |
| 1895 | 1895 | 1895 | 2145d | 2395f | 2295 | | 123 | 32x4* | Lexington | Ansted-M. | 6-3 1/2 x 5 1/4 | 26.30 | Rayfield | G-D | Conn. | s-p Long. | Warner | f Sneed | 1/2 F Salis | 5.10 | R-T | |
| 1575 | 1575 | | | | | | 117 | 32x4 | Liberty | Own | 6-3 1/2 x 5 | 23.44 | Strom | Wagner | Wagner | s-p B&B. | Detroit | m Spicer | 1/2 F Tim | 4.80 | R-T | |
| 3800 | 3800c | 3800 | | 4600c | 4400 | 4900 | 136 | 33x5* | Lincoln | Own | 8-3 3/8 x 5 | 36.45 | Strom | Delco | Delco | m-d Own | Own | m Spicer | 1/2 F Tim | 4.58 | R-R | |
| 8600 | 7900 | 7900 | | 5200 | 4700 | 5100 | 142 | 35x5 | Locomobile | Own | 6-4 1/2 x 5 1/2 | 48.60 | Ball&B. | West. | Delco | m-d Own | Own | m Own | F Own | 3.50 | R-T | |
| | | | | 12200 | 11750 | 11600 | | | | | | | | | | | | | | | | |
| | | | | 12200 | 12200 | | | | | | | | | | | | | | | | | |
| 3095 | 3095 | 2895 | | 3585 | 4285 | | 136 | 32x4 1/2 | Marmion | Own | 6-3 3/4 x 5 1/2 | 33.75 | Strom | Delco | Delco | m-d Own | Own | m Spicer | 3/4 F Own | 4.10 | R-R | |
| 875 | 875 | | 975b | 995 | 1195 | 1585d | 109 | 31x4 | Maxwell | Own | 4-3 3/4 x 4 1/2 | 21.03 | Stewart | Remy | Remy | s-p Mech. | Own | f Own | 1/2 F Own | 4.60 | R-T | |
| 2500 | 2500 | | | 3000 | 3000 | | 127 | 32x4 1/2 | McFarlan | Wisc. | 6-3 3/4 x 5 | 27.34 | Rayfield | Delco | Delco | m-d Long. | Warner | | 1/2 F Univ | 5.10 | R-T | |
| 5400 | 5600 | 5700 | | 6720 | 6600c | 6810 | 140 | 33x5 | McFarlan | Own | 6-4 1/2 x 6 | 48.60 | Rayfield | West. | West. | m-d M&E. | B-L | m Peters | 1/2 F Tim | 3.75 | R-R | |
| 1395 | 1395 | | 1595d | 1785c | 1795 | 1995 | 115 | 31x4* | Moon | Cont. | 7 U | 6-3 1/4 x 4 1/4 | 23.44 | Strom | Delco | Delco | s-p B&B. | Warner | f Sneed | 1/2 F Tim | 5.10 | R-T |
| | | | | 1995 | 1995 | | | | | | | | | | | | | | | | | |
| | 2150p | 1885 | 2095f | 2685 | 2585 | | 128 | 32x4 1/2 | Moon | Cont. | 8 R | 6-3 3/4 x 4 1/2 | 27.34 | Strom | Delco | Delco | s-p B&B. | B-L | m Spicer | 1/2 F Tim | 5.09 | R-R |
| | 1095 | | 1295d | | | | 113 | 31x4* | Moon | Cont. | 7 U | 6-3 1/4 x 4 1/4 | 23.44 | Strom | Delco | Delco | s-p B&B. | Warner | m Spicer | 1/2 F Tim | 5.10 | R-T |
| 1275 | 1275 | 1050g | 1645c | 2090c | 1640 | 2040 | 121 | 33x4 | Nash | Own | 6-3 1/4 x 5 | 25.35 | Marvel | Delco | Delco | s-p B&B. | Own | m Own | 1/2 F Own | 4.50 | R-T | |
| | | | | | 2040 | | | | | | | | | | | | | | | | | |
| 915 | 935 | | 1425 | 1195c | 1165 | 1445 | 127 | 34x4 1/2 | Nash | Own | 6-3 1/4 x 5 | 25.35 | Marvel | Delco | Delco | s-p B&B. | Own | m Own | 1/2 F Own | 4.90 | R-T | |
| | | | | 1165 | 1445 | 1275 | 112 | 33x4 | Nash | Own | 4-3 3/4 x 5 | 18.23 | Marvel | Delco | Delco | s-p B&B. | Own | m Own | 1/2 F Own | 5.50 | R-T | |
| 995 | 995 | | 1095a | 1195 | 1445 | | 113 | 31x4 | Oakland | Own | 6-2 1/4 x 4 3/4 | 18.90 | Strom | Remy | Remy | s-p Hoos. | Muncie | m Mech. | 1/2 F Own | 4.70 | R-T | |
| 785 | 795 | | 1095d | 985 | 1075 | | 110 | 31x4 | Oldsmobile | Own | 6-2 3/4 x 4 3/4 | 18.15 | Zenith | Delco | Delco | s-p B&B. | Muncie | f Own | 1/2 F Own | 5.10 | R-T | |
| 495 | 495 | | 395g | 750 | 795 | 655d | 100 | 30x3 1/2 | Overland | Own | 4-3 1/4 x 4 | 19.60 | Tillotson | A-L | A-L | s-p B&B. | Own | m Own | 1/2 F Own | 4.50 | R-R | |
| | 695 | | | | | | 106 | 30x3 1/2 | Overland | Own | 4-3 1/4 x 4 | 19.60 | Tillotson | A-L | A-L | s-p B&B. | Own | m Own | 1/2 F Own | 4.50 | R-R | |
| 2585 | 2585 | 2350g | 2750c | 3275c | 3375 | 3450 | 126 | 33x4 1/2 | Packard | Own | 6-3 3/4 x 5 | 27.34 | Own | A-K | Delco | m-d Own | Own | m Spicer | 1/2 F Own | 4.66 | R-R | |
| 3850c | 3650 | 2785 | 2450g | 3625f | 3675f | 133 | 133 | 33x4 1/2 | Packard | Own | 6-3 3/4 x 5 | 27.34 | Own | A-K | Delco | m-d Own | Own | m Spicer | 1/2 F Own | 4.66 | R-R | |
| | | | | 4550c | 4725 | 4700f | 136 | 33x5 | Packard "Eight" | Own | 8-3 3/4 x 5 | 36.45 | Own | Dyneto | Delco | m-d Own | Own | m Spicer | 1/2 F Own | 4.70 | R-R | |
| | 3850 | | | 4900f | 4950f | 143 | 143 | 33x5 | Packard "Eight" | Own | 8-3 3/4 x 5 | 36.45 | Own | Dyneto | Delco | m-d Own | Own | m Spicer | 1/2 F Own | 4.70 | R-R | |
| | 1795 | | d2150j | 2595 | 2595 | 131 | 131 | 33x4 1/2 | Paige | Cont. Spec. | 6-70 | 33.75 | Rayfield | Remy | A-K | m-d Long. | Warner | m Mech. | 1/2 F Tim | 4.60 | R-R | |
| | 1995p | | 1995p | 2770p | 2770p | | | | | | | | | | | | | | | | | |
| 1550 | 1390 | 1425 | 1465d | 2395d | 2395 | | 120 | 32x4 1/2 | Paterson | Cont. | 8 R | 6-3 3/4 x 4 1/2 | 27.34 | Strom | Delco | Delco | s-p B&B. | Durston | m Hart. | 1/2 F Salis | 4.50 | R-R |
| 1985 | 1985 | | | 2675 | 2675 | | 126 | 32x4 1/2 | Peerless | Own | 6-3 1/4 x 5 | 29.40 | Johnson | Delco | Delco | m-d Own | Own | m Spicer | 1/2 F Tim | 4.66 | R-R | |
| | 2690 | 2750 | 2260g | 3300 | 3300 | 3840 | 128 | 33x5* | Peerless | Own | 8-3 1/4 x 5 | 33.80 | Ball&B. | Delco | Delco | m-d Own | Own | m Spicer | 1/2 F Tim | 4.90 | R-R | |
| 5250 | 5250 | 5250 | | 6800 | 6900 | 6800 | 138 | 33x5 | Pierce-Arrow | Own | 6-4 x 5 1/2 | 38.40 | Own | Delco | Delco | m-d Own | Own | m Spicer | 1/2 F Own | 4.29 | R-R | |
| | | | | 7000f | 7000 | | | | | | | | | | | | | | | | | |
| 1745 | 1695 | 1745 | 1795c | 2195f | 2195 | 2645 | 126 | 32x4 1/2 | Pilot | H-S. | 90 | 6-3 1/2 x 5 | 29.40 | Tillotson | Wagner | Wagner | m-d Hoos. | Muncie | m Blood | 3/4 F Col. | 4.67 | R-R |
| 2535 | 2585 | 2585d | 2635d | 3385 | 3385 | 3585 | 126 3/4 | 32x4 1/2 | Premier | Own | 6-3 3/4 x 5 1/2 | 27.34 | Strom | Delco | Delco | s-p B&B. | Own | m Spicer | 1/2 F Tim | 4.58 | R-R | |
| 2300 | 2350 | 2400c | 3000d | 3050 | 3250 | 124 | 124 | 32x4 1/2 | R & V Knight | Own | Kn't | 6-3 1/4 x 4 1/2 | 29.40 | Strom | A-L | A-L | s-p B-L. | B-L | m Spicer | 1/2 F Tim | 5.40 | R-R |
| 1335 | | 1595d | | 1875 | d2335f | 120 | 120 | 32x4* | Reo | Own | 6-3 1/4 x 5 | 24.34 | Rayfield | N.E. | N.E. | m-d Own | Own | m Own | 1/2 F Own | 4.70 | R-R | |
| 3200c | 3200 | | 3200c | 4000 | | | 131 | 32x4 1/2 | Revere | Monsen. | 4 | 4-4 3/8 x 6 | 30.63 | Strom | West. | Bosch | m-d B-L. | B-L | m Spicer | 3/4 F Std. | 3.44 | R-R |
| 1645 | 1595 | | 2035 | 2135 | | | 117 | 32x4* | Rickenbacker | Own | 6-3 1/4 x 4 1/2 | 23.44 | Strom | Bosch | Bosch | s-p Own | Own | m Mech. | 1/2 F Own | 4.60 | F-T | |
| 2685 | 2485 | 2685 | 2750c | 3285 | 3585 | 3585d | 118 | 32x4 1/2 | Roamer | Cont.12XD | 6-54-E | 6-3 1/4 x 5 1/4 | 29.40 | Strom | West. | Split | s-p B&B. | Fuller | f M&E | 3/4 F Tim | 4.60 | |
| | | | | 4250p | 3950 | | 138 | 32x4 1/2 | Roamer | Cont.12XD | 6-54-E | 6-3 1/4 x 5 1/4 | 29.40 | Strom | West. | Split | s-p B&B. | Fuller | f M&E | 3/4 F Tim | 4.60 | R-R |
| 3685 | 3485 | 3800 | 3650c | 4650p | | | 128 | 32x4 1/2 | Roamer | Due. | G1 | 4-4 1/4 x 6 | 28.90 | Strom | West. | Bosch | m-d B-L. | B-L | f M&E | 3/4 F Tim | 4.63 | R-R |
| 3785 | | | | | | | | | | | | | | | | | | | | | | |
| | 895 | | | 1275 | | | 112 | 31x5 1/4 | Rollin | Own | 6-4 1/4 x 4 1/2 | 16.90 | Tillotson | Dyneto | Conn. | s-p B&B. | Muncie | f Sneed | 1/2 F Salis | 5.10 | F-T | |
| 11400 | 10900 | 11450 | | 12800 | 12850 | 143 1/2 | 143 1/2 | 33x5 | Rolls-Royce | Own | 6-4 1/2 x 4 3/4 | 48.60 | Own | Special | c | Own | Own | m Own | F Own | 3.72 | R-R | |
| | | | | 13500 | 12900 | | | | | | | | | | | | | | | | | |
| 1645 | 1645 | | 2645d | 2645 | | | 136 | 33x5 | Sayers Six | Cont. | 6J | 6-3 3/4 x 5 | 33.75 | Strom | Delco | Delco | s-p B&B. | B-L | m Cle. | F Tim | 4.91 | R-R |
| 985 | 985 | | | 3585 | 3985 | | 112 | 31x4 | Seneca | Lyc. | CF | 4-3 3/4 x 5 | 21.03 | Zenith | A-L | A-L | s-p B&B. | Own | m Univ. | 1/2 F Pen. | 4.50 | R-R |
| 2750 | 2750 | 2750 | 2425g | 695 | 785 | p935d | 102 | 30x3 1/2 | Stanley | Own | 2-4 x 5 | 13.00 | None | Bijur. | None | None | None | None | 1/2 F Own | 4.50 | R-R | |
| 510 | 540 | | 610d | 695 | 785 | p935d | 102 | 30x3 1/2 | Star | Cont. Spec. | 4-3 3/4 x 4 1/4 | 15.63 | Tillotson | A-L | A-L | s-p Own | Warner | m Spicer | 1/2 F Ad. | 4.87 | R-R | |
| 1750c | 1750 | 1445g | e1995p | 2350 | d2195f | 119 | 119 | 33x4 1/2 | Stearns-Knight | Own | Kn't | 4-3 3/4 x 5 1/2 | 22.50 | Schebler | A-L | A-K | m-d Own | Own | f Cli. | 1/2 F Own | 4.50 | R-R |
| 2395 | 2395 | 2495 | 2195g | 3395 | 3395 | 3395 | 130 | 33x5 | Stearns-Knight | Own | Kn't | 6-3 1/4 x 5 | 25.35 | Schebler | A-L | A-K | m-d Own | Own | f Cli. | 1/2 F Own | 4.70 | R-R |
| | | | | 3150p | 3200f | | | | | | | | | | | | | | | | | |
| 1295 | 1295 | | 1595d | 1995 | | | 117 | 32x4 | Stephens | Own | 6-3 1/4 x 4 1/2 | 25.35 | Strom | Delco | Delco | s-p B&B. | Mech. | m Mech. | 1/2 F Tim | 5.10 | R-T | |
| | 1750 | 1595 | 1850c | | 2250 | | 124 | 33x4 | | | | | | | | | | | | | | |



MODEL 44
BROUGHAM



Are Your Relations With Your Factory Friendly and Businesslike?

Think it over and you'll see that the answer to that question is the very foundation of your success as an automobile dealer. The foundation is strong or it is weak. In any event it is *your* foundation, *your* business depends on it.

Every Westcott dealer knows that his interests are our interests. He appreciates the cooperation he gets from the factory. Whenever he has a problem he finds us willing to listen and willing to *help*.

His contract is a sensible agreement. It never plunges him into deep water when he's momentarily out of breath.

He is never forced to accept an ultimatum in spite of his own judgment.

In other words, Westcott dealers and Westcott factory officials are *friends*. Their relations are conducted on a sound business basis.

* * * * *

There's more to the story than we've told here. We'd like to put all the facts before you and let you see for yourself that the Westcott dealer franchise is based on profits for us and for you. We'd be glad to hear from you.

WESTCOTT MOTOR CAR COMPANY
Springfield, Ohio

J. Westcott
President.



LONG~LIFE **Kokomo** **Balloons**

Kokomo Balloons (including balloon cords for both existing rims and special wheels) offer an unusual opportunity to share in the profits of an ever-increasing market.

The big, black Kokomo Balloon has a distinctive tread design—and the rugged rubber “bumpers” on the sidewall for protection against curb rasping and lateral shocks.

With this handsome new tire, unsurpassed in quality, you can dominate your local balloon market.

Write—and let us tell you how to get your share of this new business.

KOKOMO RUBBER CO., KOKOMO, INDIANA



Yes!



Gardner pulling through Missouri's mud. "Cannon Ball" Baker at the wheel.

You Can Make Real Money

With the Car whose performance amazed "Cannon Ball Baker"

When "Cannon Ball" Baker drove a stock Gardner Sedan from New York to Los Angeles *in midwinter*, he put a selling force of inestimable value behind every Gardner dealer.

1200 Gardner dealers are reaping the harvest. With a complete line of open and enclosed models, a price range within easy reach of 94% of all automobile prospects, and *an unusually big discount*, they are cashing in on the demand created for the Gardner by Baker's record run.

Write or wire for details of the Gardner contract—one of the fairest and simplest in the industry.

THE GARDNER MOTOR CO., INC.

ST. LOUIS, U. S. A.

GARDNER

We have published the full story of "Cannon Ball" Baker's record run in booklet form. If you would like to receive a copy, fill in and mail the coupon.

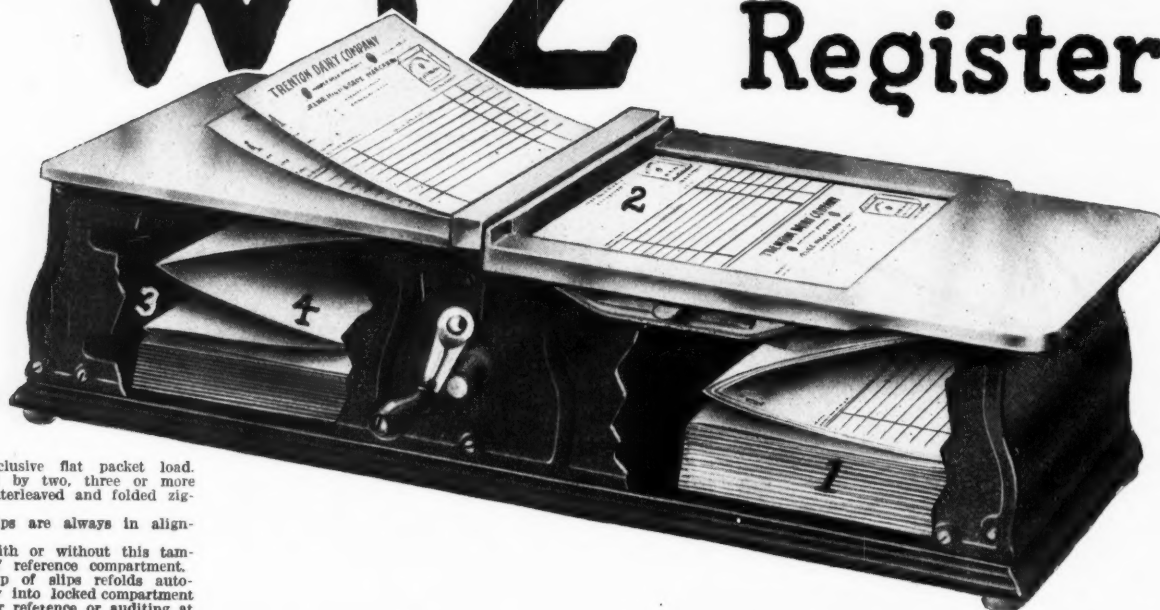
The Gardner Motor Co., Inc., St. Louis, U. S. A.
Please send me free illustrated booklet which tells full story of "Cannon Ball" Baker's record coast-to-coast run.

Name
Address
.....

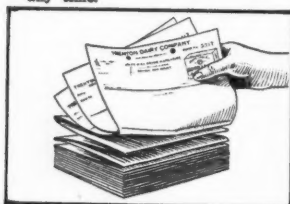
Booklet Free

Mail Coupon

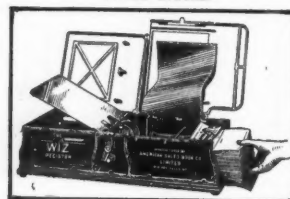
WIZ Flat Packet Register



- 1: Wiz exclusive flat packet load. Formed by two, three or more strips interleaved and folded zig-zag.
- 2: Wiz strips are always in alignment.
- 3: Made with or without this tamper-proof reference compartment.
- 4: One strip of slips refolds automatically into locked compartment ready for reference or auditing at any time.



THE LOAD



LOADING



AUDITING

One-Packet Load—Flat Audit Strip

Wiz is used for many kinds of handwritten automotive records. Wiz introduces the new flat packet principle, a great improvement over roll form registers. It makes any number of copies and strengthens the best shop and office records by making better original entries.

Easy and Quick to Load

The load is one flat packet of printed forms interleaved and folded zig-zag; ready to insert in the Wiz. To load the Wiz Register obviously requires much less time than inserting three or more rolls, adjusting tension springs and placing first slips in alignment.

In a recent contest, nine men loaded a Wiz Flat Packet Register in less than half a minute each; one man in twenty-three seconds.

Auditing from Lock-up Record

The top picture of the Wiz Register, with its sides cut away, shows one strip of checks automatically refolded in the tamper-proof locked compartment (No. 4) after the transaction has

been recorded. The record of any transaction can be referred to instantly and then replaced without disturbing the load.

Auditing from the locked zig-zag strip of flat tickets is much easier than from a long rolled strip which curls over the desk and floor. The Wiz audit strip is a perfect file in itself, always in numerical order and accessible at any page, avoiding an awkward file of rolls.

Aligns Strips Automatically

One turn of the crank issues and files tickets and automatically places the next set of tickets in alignment.

Automobile dealers, garages, service stations, supply houses and filling stations can all improve their records by using Wiz.

Over 100 company officers conveniently located in all trade centers. Our representatives are especially instructed. They average long years of service and are capable of rendering just the quality of service you desire.

American Sales Book Company, Ltd., Elmira, N. Y.

West of the Rockies

**Pacific Manifolding Book Co.,
Emeryville, Cal.**

**Pacific Coast Sales Book Co.,
Los Angeles, Cal.**

In Canada

**F. N. Burt Company, Ltd.,
Toronto, Can.**

Why Our Men Serve Well
44% in service 15 to 38
years.
26% in service 10 to 15
years.

Pin to forms now used or to letterhead for information without obligation.

Dept. A7284

**American Sales Book Co.
Elmira, N. Y.**

Please tell me about Wiz Register for items checked—see letter.

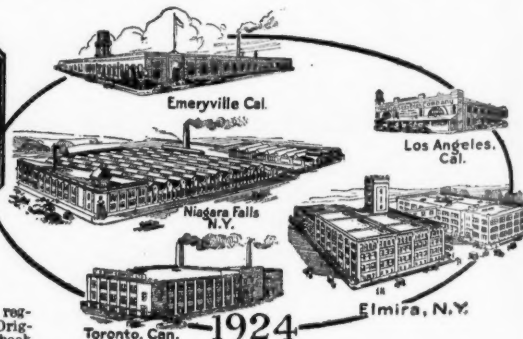
- ☐ Cash Sales
- ☐ With Cash Drawer
- ☐ Charge Sales
- ☐ Invoices
- ☐ Express Receipts
- ☐ Purchase Orders

- ☐ Receiving Orders
- ☐ Delivery Receipts
- ☐ Parts Requisitions
- ☐ Repair Orders
- ☐ Warehouse Orders



1884

Makers of autographic registers since 1893. Originators of the sales book industry in 1884. Pioneers in the manufacture of books, machines and forms using carbon paper.





New Prices New Opportunity New Management

These three features combined with factory assistance to promote sales, service and financing offer inducements hard to beat.

We make no claim to having a line which will make you rich overnight. But many Velie distributors have been profitably selling cars in large and small cities for more than 10 years.

The Velie business is now under new management. There has been no change in ownership, but the executive staff has been augmented, and the new personnel has greatly stimulated production, sales and quality of merchandise.

Today, Velie offers you a chance to sell a line with ample discounts; a manufactured, not assembled product; the largest Six in the world for the price, with 118-inch wheelbase and a 50-H. P. six cylinder, Valve-in-the-Head engine; an economical car which makes friends and stands up in service.

Add to this the fact that the line is backed by liberal advertising, an attractive dealer finance plan and ample sales helps.

Again, a most important sales feature is found in the fact that for 16 years Velie has been successfully making automobiles. In all that time its products have always enjoyed a good reputation.

Wire—or write—and let us tell you something about Velie as a corporation, the Velie car and its plans for dealers. We will lay positive evidence before you of what this line will do for you, namely—make you money!

Phaeton \$1095 Sedan \$1545
At the Factory—U. S. tax extra

VELIE MOTORS CORPORATION, MOLINE, ILLINOIS, U. S. A.



Answering some questions about the Remington Cash Register

YES—the Remington Cash Register is designed, patented, produced, marketed and serviced by the makers of the celebrated Remington Arms, Ammunition and Pocket Cutlery.

YES—the Remington Cash Register Company is a specialized division of the Remington organization created and controlled by the Remington Arms Company, Inc., to carry on its cash

register business.

YES—the Remington Cash Register contains many exclusive features which are new inventions, created by the livest inventive talent in America—retained by Remington to make the Remington Cash Register the last word in line with retail selling today.

The Remington is the *new* and *better* Cash Register. You ought to see it.

Akron, Ohio
Albany, N. Y.
Atlanta, Ga.
Baltimore, Md.
Binghamton, N. Y.
Birmingham, Ala.
Boston, Mass.
Bridgeport, Conn.
Brooklyn, N. Y.
Buffalo, N. Y.
Charlotte, N. C.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
Dallas, Tex.
Davenport, Ia.
Denver, Colo.
Des Moines, Ia.
Detroit, Mich.
E. St. Louis, Ill.

REMINGTON CASH REGISTER CO., Inc.

Factory and General Sales Office, Ilion, N. Y.

Subsidiary of REMINGTON ARMS COMPANY, Inc.

25 Broadway, New York, N. Y.

In Canada: Remington Cash Register Company of Canada, Ltd.
557 Yonge Street, Toronto, Ont., Canada.

Fargo, N. D.
Fort Worth, Tex.
Fresno, Calif.
Grand Rapids, Mich.
Harrisburg, Pa.
Hartford, Conn.
Houston, Tex.
Indianapolis, Ind.
Jacksonville, Fla.
Jersey City, N. J.
Kansas City, Mo.
Lansing, Mich.
Little Rock, Ark.

Los Angeles, Calif.
Louisville, Ky.
Madison, Wis.
Memphis, Tenn.
Miami, Fla.
Milwaukee, Wis.
Minneapolis, Minn.
Nashville, Tenn.
Newark, N. J.
New Orleans, La.
New York City
Oakland, Calif.
Oklahoma City, Okla.

Omaha, Nebr.
Philadelphia, Pa.
Pittsburgh, Pa.
Portland, Me.
Portland, Ore.
Providence, R. I.
Reading, Pa.
Rochester, N. Y.
Sacramento, Calif.
Salt Lake City, Utah
San Antonio, Tex.
San Diego, Calif.
San Francisco, Calif.

Seattle, Wash.
Sioux City, Ia.
Spokane, Wash.
Springfield, Mass.
Springfield, Ohio
St. Louis, Mo.
St. Paul, Minn.
Syracuse, N. Y.
Tacoma, Wash.
Tampa, Fla.
Toledo, Ohio
Trenton, N. J.
Utica, N. Y.
Washington, D. C.
Wheeling, W. Va.
Wichita, Kan.
Wilkes-Barre, Pa.
Wilmington, Del.
Yonkers, N. Y.
Youngstown, Ohio

There is a Remington Cash Register built to fit your business. Get in touch with the Office nearest to you, and you will find our representative there willing and glad to make a complete demonstration.



40% MORE MATERIAL-

"Grapnalized" ↗

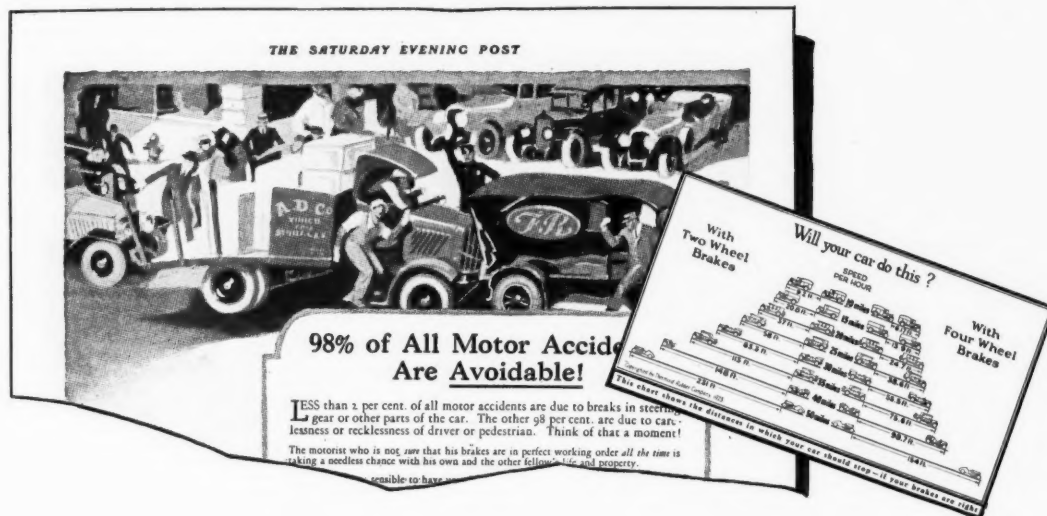
Folded and Stitched ↗

Compressed ↗

NO WONDER IT LASTS!

Thermoid
Hydraulic Compressed
Brake Lining

Thermoid
HYDRAULIC COMPRESSED
100% BRAKE LINING



The Car Owner's Safety Spells Success for the Garage Man

IN many communities certain garages are getting to be known as "Safety First Shops." That's the kind of reputation worth having. It draws business.

It is our job to build that sort of reputation for the garages that use Thermoid. Because Thermoid sales depend upon the number of motorists we can send to garages using our product.

One of the purposes of our nation-wide publicity is to impress the car owner with the necessity for brake inspection and the dependability of Thermoid Brake Lining.

But the main idea of our advertising is to send the motorist to a qualified brake expert—the Thermoid Garage Man.

If you want to be the "Safety First Man" in your locality, you will find Thermoid a good line to tie to.

THERMOID RUBBER COMPANY, Trenton, N. J.

New York, Chicago, Los Angeles, Detroit, Atlanta, Seattle, Kansas City, Boston, San Francisco, Cleveland, London, Paris, Turin

Makers of Rexoid Transmission Lining, Thermoid Tires, Thermoid-Hardy Universal Joints

Thermoid

Hydraulic Compressed

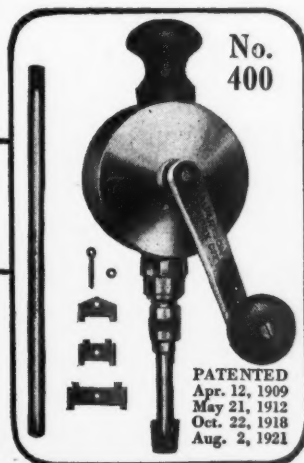
Brake Lining



SIoux
 Trade Mark Reg. U.S. Patent Office

PERFECT Valve Grinding Made Easy!

You can't do a really good job of valve grinding without the proper tool. The Sioux Valve Grinder does the job right—and does it much easier and quicker than old makeshift methods. It works on the correct principle—a continuous turn of the handle in one direction—gives the valve a full turn in one direction, alternated with a $\frac{3}{4}$ turn in the other direction, so that every part is ground to fit accurately. An end-thrust ball-bearing with a spring takes up all wear and insures smooth running and full efficiency.



SIoux VALVE GRINDER

Ask Your Jobber About It

ALBERTSON & CO.

SIOUX CITY, IOWA



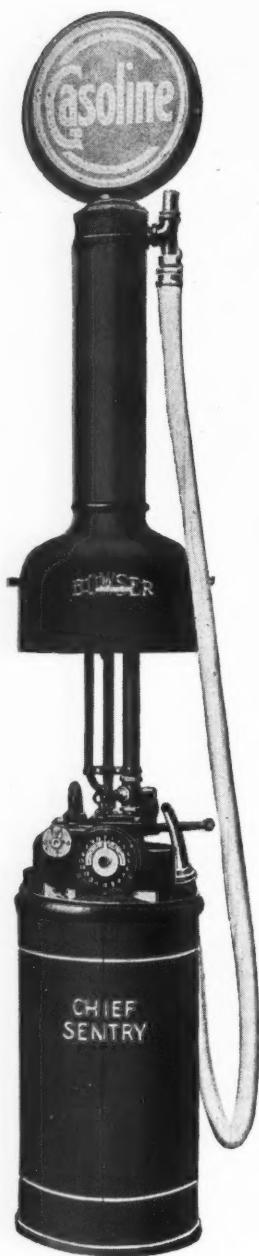


Sell Yourself to New Customers With a Curb Pump

Stop people at your curb with a big Bowser Sentry. Sell them dependable gasoline. Sell them quality oil. Talk to them about repairs—accessories—tires. Get them to stop on their way back, and give you their custom, by selling them quality products through quality pumps.

A Bowser curbside pump will do all this, will help you increase profits this spring.

And, we can put a tried-and-true Bowser on your curb right away—prompt shipment, quick shipment, quick installation, and the pump's bringing in cash every hour!



CHIEF SENTRY

Serves gasoline quickly, accurately and easily—free from water and sediment.

S.F. BOWSER & COMPANY, Inc.

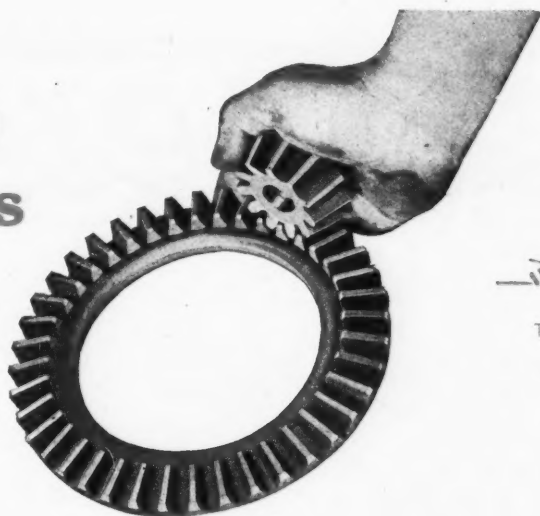
Pump and Tank Headquarters

F O R T W A Y N E , I N D I A N A .

Sales and Service Offices and Representatives Everywhere



**Over 800,000
Rolled Gears
In Use In
Fords**



Why Do Rolled Gears Improve The Operation Of Ford Cars?

Because:

1. In forming the gear teeth by our patented process the hot metal is subjected to great pressure while being rolled. Its quality is improved in the same way that hot rolling adds strength and toughness in the manufacture of steel railroad rails. Tests by independent engineers show that teeth in rolled gears are more than 20 per cent stronger than the teeth in cut gears.
2. The teeth are rolled in contact with a ground and hardened master die, which insures accurate tooth formation, a dense structure and a smooth tooth surface, after which they are hardened.
3. Accurately formed teeth with smooth surfaces are quiet in operation. They resist wear and transmit power with a minimum of loss.

Remember

INTERNATIONAL GEARS ARE UNCONDITIONALLY GUARANTEED for quality, workmanship and performance—the user to be the judge.

Ring Gear for Ford (No. 2518), \$2.50. Drive Pinion (No. 2597-B), \$1.00.

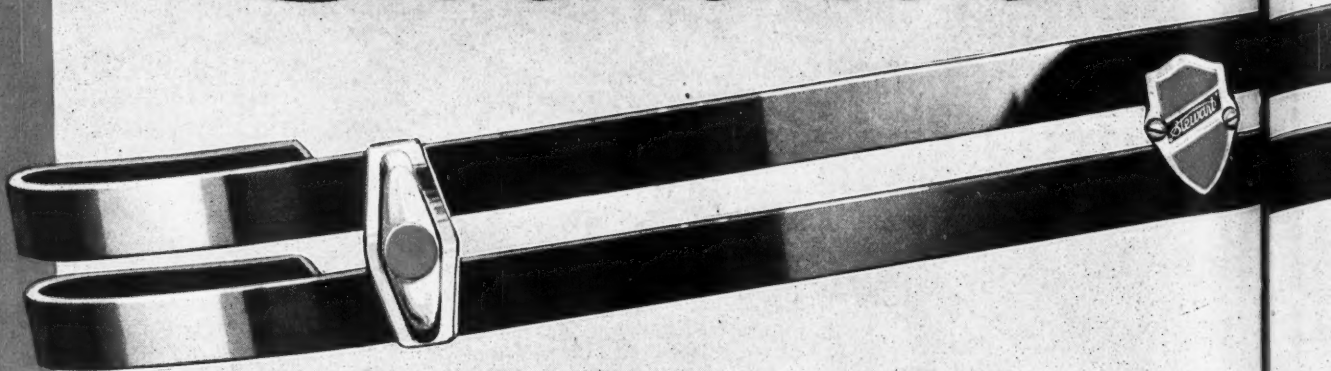
FORD PARTS DEALERS AND REPAIRMEN—If your local jobber cannot supply you write for dealer discounts.

JOBBER—We have attractive discounts for you—write for them.

INTERNATIONAL GEAR CO., INC.
Lakewood, Ohio

Rolled Gears last many years—International

Stewart



De Luxe Model 175

Nickel finish \$23.00
Black finish \$21.00

(Western prices, \$3.00 additional)



Standard Model 194

Nickel finish (medium weight) \$20.00
Black finish \$18.00

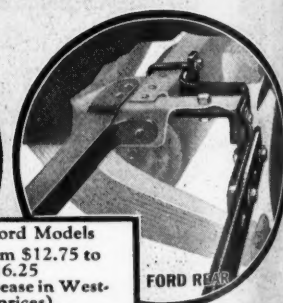
(Western prices, \$3.00 additional)



Medium Weight Model 201

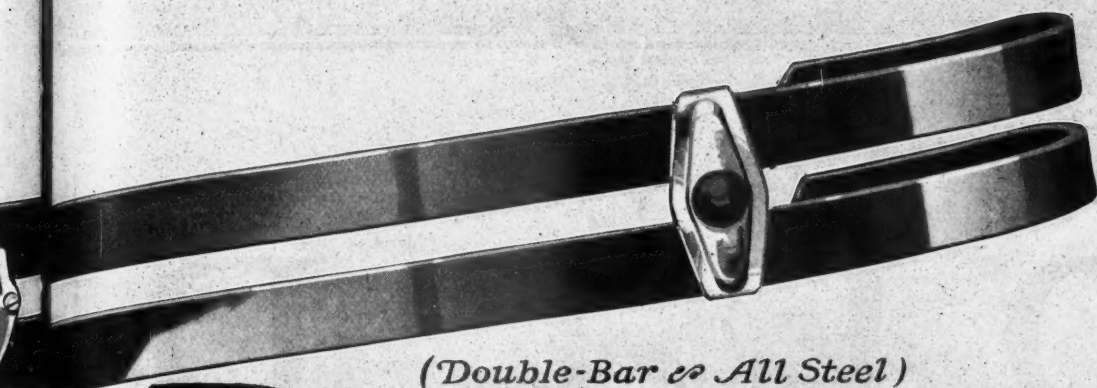
Nickel finish \$16.00
Black finish \$13.50

(Western prices, \$2.50 additional)



Special Ford Models
Priced from \$12.75 to
\$16.25
(\$2.50 increase in West-
ern prices)

Stewart CUSTOMBILT ACCESSORIES USED ON 9 MILLION CARS



(Double-Bar *is* All Steel)

Bumpers

ONE big advantage to dealers in carrying Stewart Bumpers, is the wide range of price that is offered.

Ford, Chevrolet and Overland owners can get a real Stewart Bumper at a very low price, designed specially for installation on their cars.

The Model 201 is an inexpensive medium-weight Stewart Bumper for owners of other makes of cars.

For the man who wants a bumper with a little more weight and strength you can recommend the 194 model.

For the prospect who realizes the value of having the greatest possible amount of protection and wants the utmost in design, quality, beauty and finish, you have the De Luxe Model 175.

No matter what is the financial condition of your local trade we can supply you with the proper model to meet your demand.

All Stewart Bumpers are constructed entirely of steel and are of Stewart quality and workmanship.

Stewart bumper fittings are packed separately in cardboard cartons and by carrying a well picked assortment of fitting sets and a fair supply of rails, you are equipped to take care of your customers without having made a large investment or loaded up your stock space.

STEWART-WARNER SPEEDOMETER CORPORATION, CHICAGO, U.S.A



CHEVROLET
FRONT

Special Chevrolet Models
Priced from \$12.25 to
\$16.50
(\$2.50 increase in West-
ern prices)

CHEVROLET
REAR

OVERLAND
FRONT

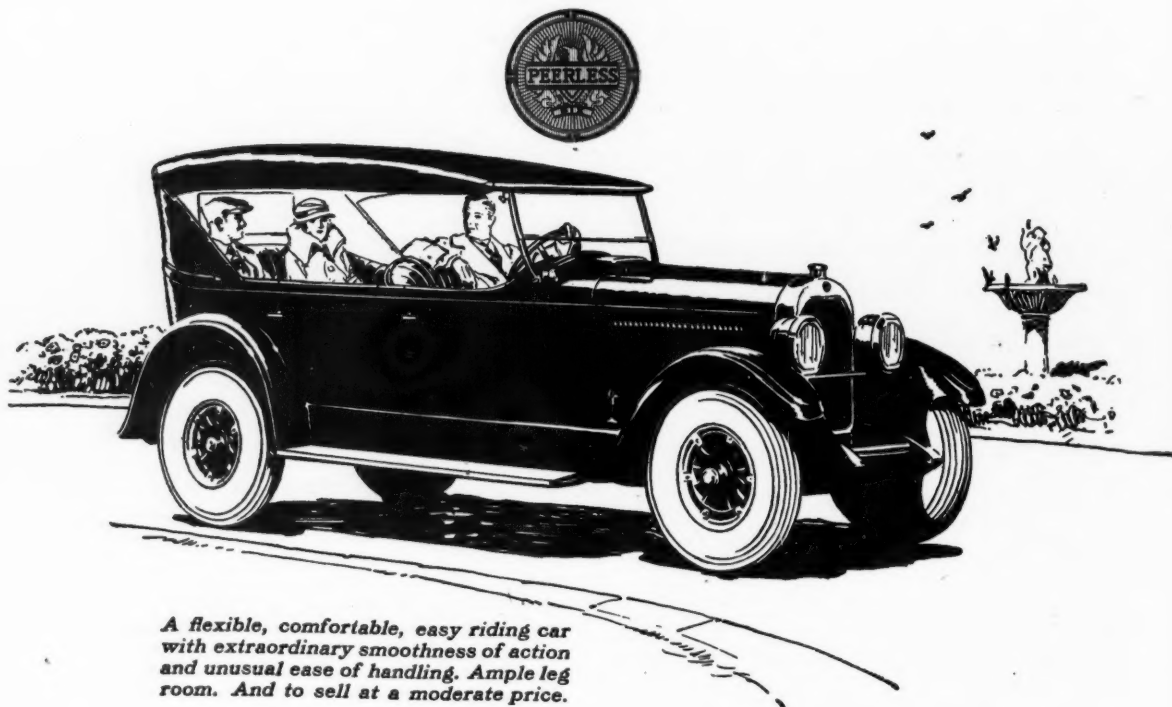
Special Overland "4" Models
Priced from \$13.25 to
\$16.25
(\$2.50 increase in West-
ern prices)

OVERLAND
REAR

Stewart CUSTOMBILT ACCESSORIES USED ON 9 MILLION CARS

The New- PEERLESS

Now it is possible for
Distributors and Deal-
ers everywhere to offer
an Eight and a Six—
Both Peerless. ~ ~



*A flexible, comfortable, easy riding car
with extraordinary smoothness of action
and unusual ease of handling. Ample leg
room. And to sell at a moderate price.*

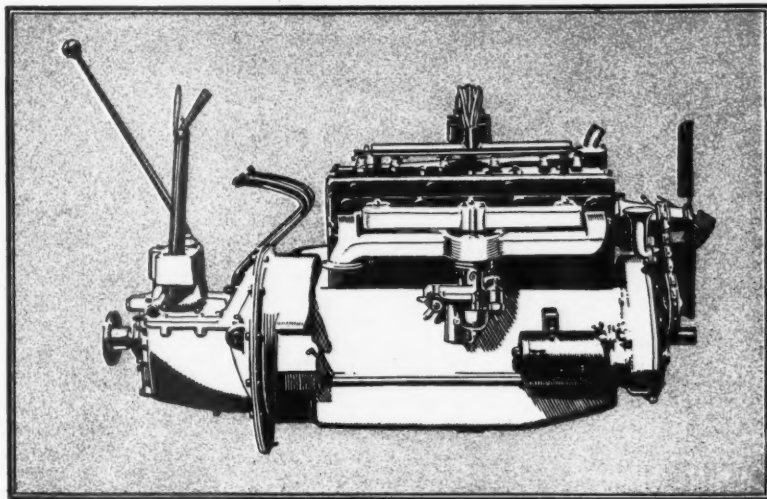
PEERLESS

ENGINE—clean, smooth-running and tremendously powerful. Develops over 70 brake H. P. Designed by Peerless. Built entirely in Peerless Shops. Cylinders, $3\frac{1}{2}$ " bore x 5" stroke. Seven main crank shaft bearings, $2\frac{3}{8}$ " in diameter. Light, reciprocating parts balanced to a nicety. All bearings accessible on removal of lower pan. A really fine power plant.

We Invite Correspondence

THE PEERLESS MOTOR CAR CO., CLEVELAND, OHIO

The Matchless Peerless Eight and the New Peerless Six



126" wheel base. Balloon tires. Lockheed Hydraulic, 4-wheel brakes. Roadsters, Sedans, Coupes and Tourings

Meet the Best P



Victor Rubber Co., Dept. B.
Springfield, Ohio.

Please send me the full details of the new Sales Plan. Tell me how it will immediately sell tires to quality buyers.

Name

Address

Other Tires Handled.....

Prospects in Town!

OUR new Sales Plan will put you in contact with the quality buyers in your locality. It will bring them into your store asking for Victor-Springfield Cords.

That it *does* this is a matter of record,—and constant dealer experience.

How it does this we will gladly explain.

The Victor-Springfield Dealer franchise is most liberal. You will agree when you have seen it. And the Victor-Springfield Cord is the finest tire we have made in all our 22 years' experience in tire building. It sells, it repeats, and it constantly builds good will.

This opportunity is open to *one* dealer in each territory—one who appreciates, and whose customers appreciate **QUALITY** in tires;—careful individual construction rather than mass production.

The coupon will bring our plan. Send for it.

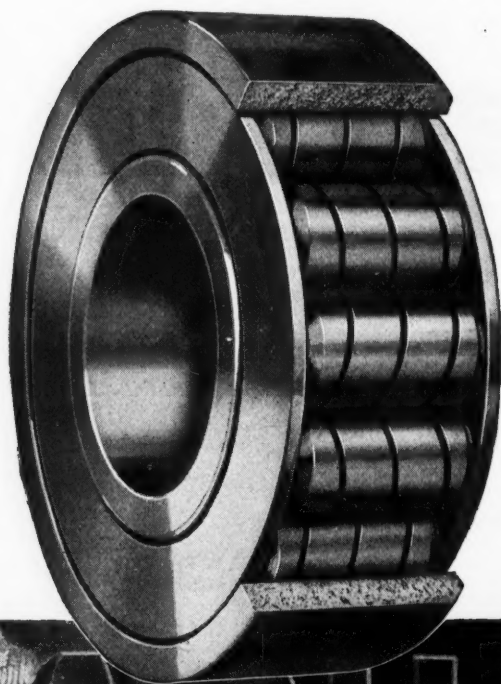
*Balloon tires of course
are included in the line.*

The Victor Rubber Co., Springfield, Ohio

Makers of tires for more than 22 years



VICTOR
SPRINGFIELD CORD



DURABILITY

Hyatt New Series Bearings possess to an even greater degree that durability which is so typically Hyatt.

Greater roller contact and increased cage strength assure that longer bearing life, closer alignment and increased ability for withstanding shock which is so essential in today's automotive vehicles.

As in all Hyatt Bearings the self-cleaning and self-lubricating

features, so distinctively Hyatt, are retained in the New Series Bearings.

Installed with these inherent safety factors—requiring no adjustment and the minimum of attention to lubrication—Hyatt New Series Bearings will give the motorist that durability in operation which eliminates bearing worries at the vital points where Hyatt Bearings are found.

HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago San Francisco

Worcester Milwaukee Huntington, W. Va. Minneapolis Philadelphia
Cleveland Pittsburgh Buffalo Indianapolis

*The
New Series*

HYATT

Quiet

Roller Bearings

BETHLEHEM

De Luxe

*Now Made
for
Fords
and
Chevrolets,
Too!*



**Radiator
Cap**

*A question You will be asked
many times this Season*

**"Do you carry the
Bethlehem De Luxe Radiator Cap?"**

Every car owner in America is in the market for a Radiator Cap that is thief-proof, convenient to handle, distinctive looking and inexpensive. That's the Bethlehem De Luxe! It is the *only* radiator cap that combines massive, beautiful appearance with convenient SERVICE!

Made with a handsome initial or emblem, to fit 102 makes of cars—from Ford to Rolls-Royce! See how *completely* it covers the market? And Bethlehem advertising in national publications will make them easy for you to sell!

Just read these real selling arguments! The De Luxe is a hinged cap with monogram latch. It locks the Motometer or emblem to the car by sealing the threads. Once on, it can't be removed except with shop tools. No turning cap to fill—no scorched fingers. Just *snap* top open and click it shut!

The De Luxe cap is a real help in selling Motometers or ornaments and it brings a mighty handsome profit when sold alone. Car dealers add to the attractiveness of their show-room models with Bethlehem De Luxe Radiator Caps. Start profits coming your way by writing for our discount sheet—TODAY.

De Luxe Cap
for Fords,
Gray and others
\$3.75.

Chevrolet,
Star, Oldsmobile
Six, Essex,
Overland and
others,
\$4.00

For other
larger cars
\$5.50

Answer it with the Goods!

C. H. Schwalb
President

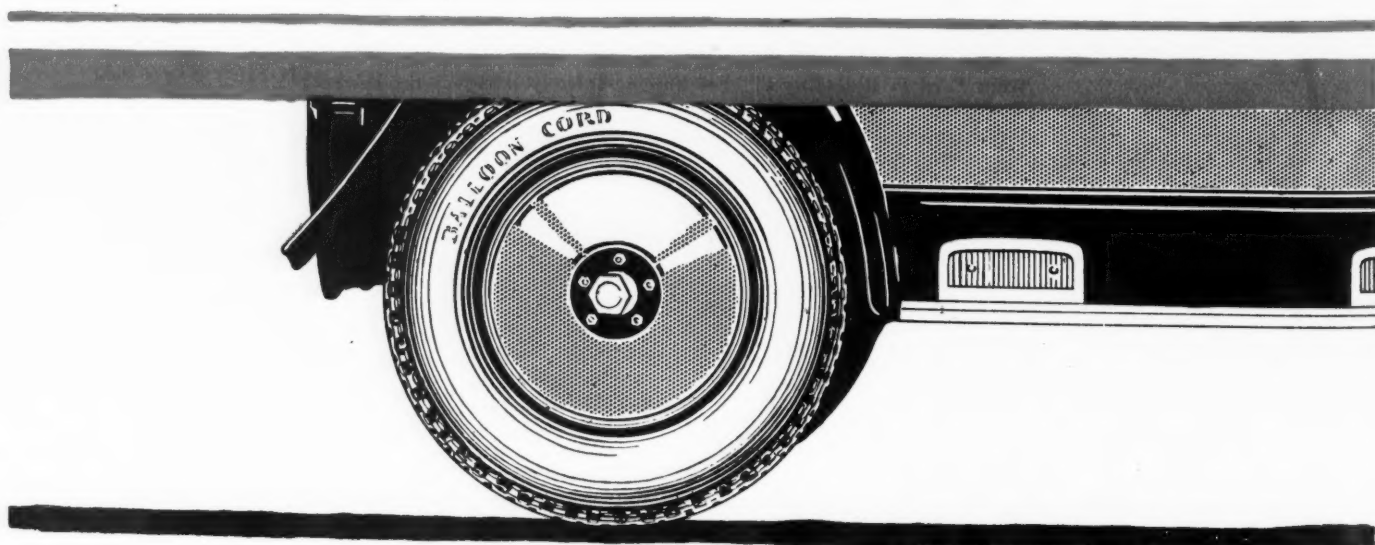
BETHLEHEM SPARK PLUG CO., Incorporated
BETHLEHEM, PA.

BETHLEHEM SPARK PLUGS

QUICKWAY SOCKET WRENCH SETS

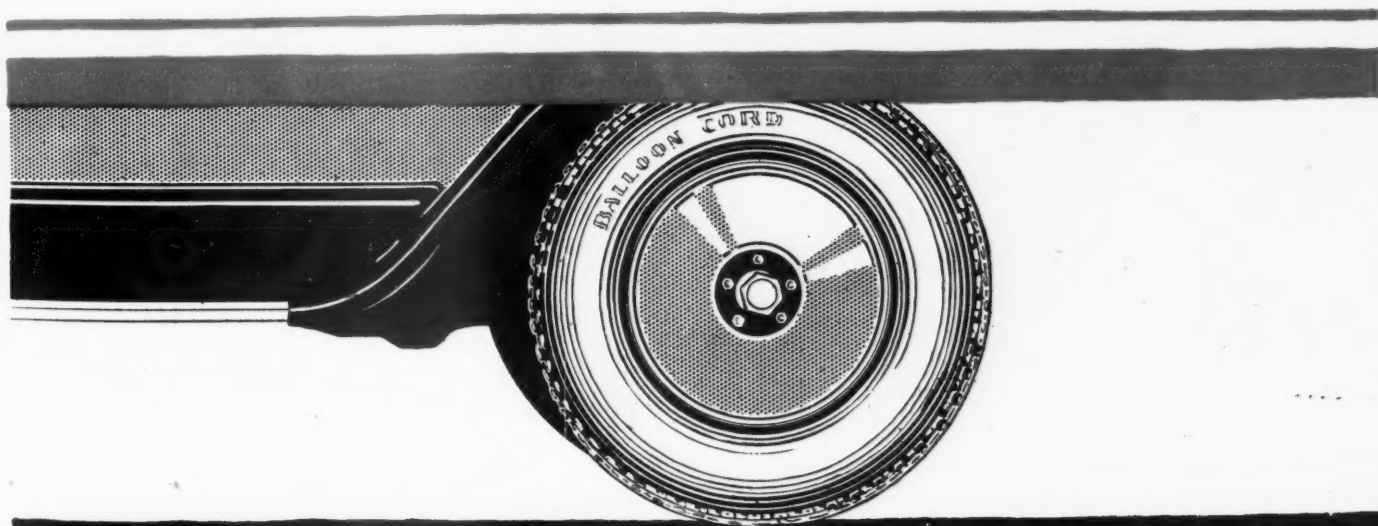
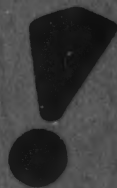
BETHLEHEM RADIATOR CAPS

**Coming
May 10th
*The Lowest Priced
Car with Balloon
Tires as Standard
Equipment***



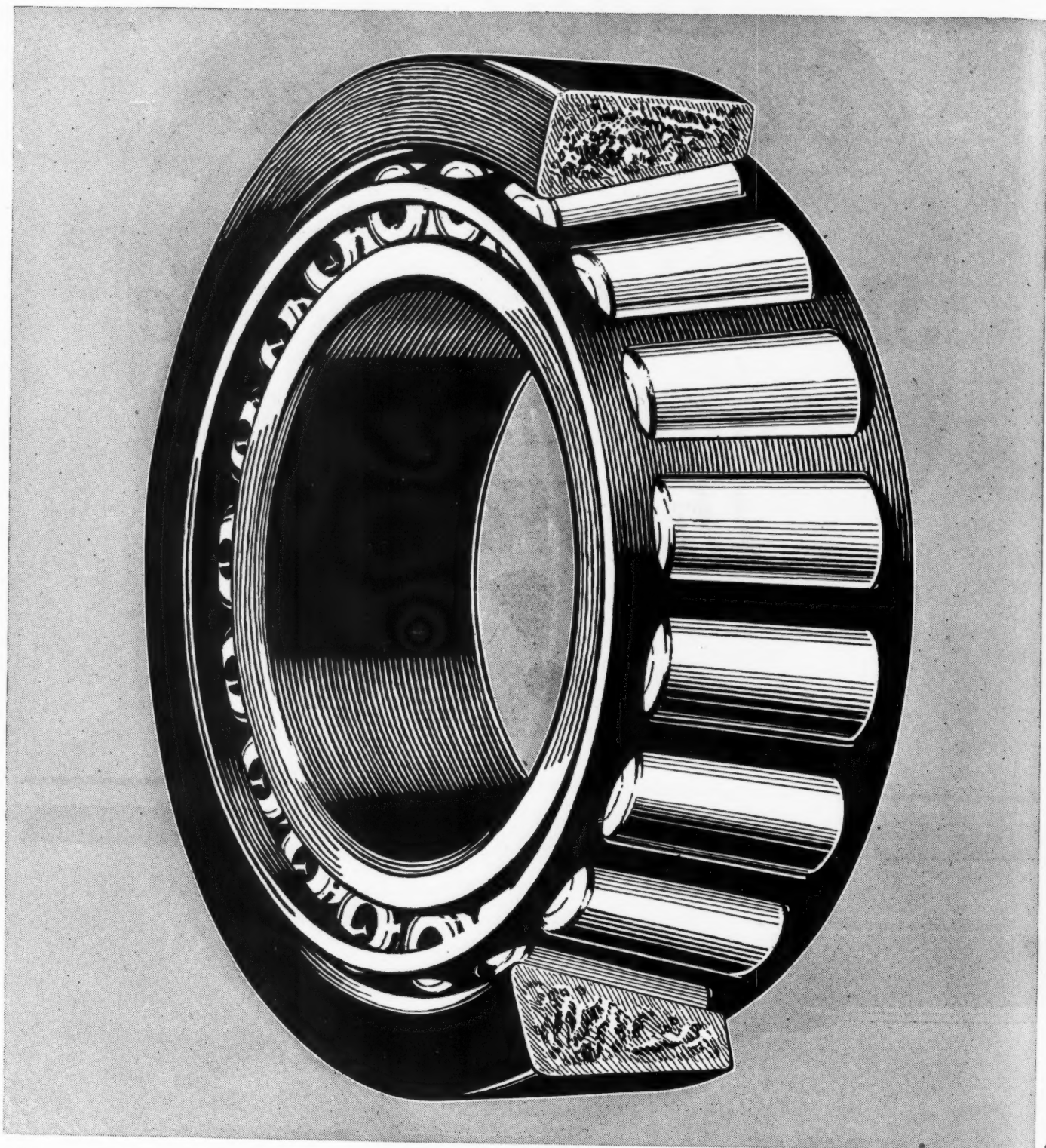
The Price Will

*Built by
One of the Five
Largest and
Strongest Automobile
Companies in
the World*



Amaze You

The Car Builder Wants



TIMKEN *Tapered
Roller*

the Six Things You Want

Control

Firm, easy control of a car gives any driver greater comfort and assurance. This feeling of security is destroyed as soon as wear develops in front axle bearings. Timken Tapered Roller Bearings are built into the steering assembly—front hubs, steering pivots and worm—to make it as nearly wear-proof as possible.

Quiet Gears

The gears in the transmission and rear axle must carry heavy loads at high speeds. If the gears are not kept in proper mesh, they become worn and noisy. Keeping them in proper mesh is up to the bearings. Rapid wear in bearings which cannot stand the severe service, produces gear wear. The more gears wear, the louder the noise. Timken Bearings keep transmissions and rear axles free from noise.

Easy Steering

Difficulty in parking a car—in directing it through traffic—fatigue from long driving—these are a reflection on a car's steering mechanism. Timken Bearings in the steering pivots bring ease of manipulation under any driving condition.

Fewer Repairs

If wheels are held true, there will be no hub nor spindle repairs. If gears are kept in permanent alignment, they will operate for the life of the car. Timken Bearings are given this specific work, not only because they are in principle the correct bearings, but because they postpone the need of replacing gears.

Long Life

The bearing at a motor car's hard service points must preserve the original alignment of the part which it serves. Not just for the first few thousand miles—but indefinitely. Timken Bearings show little wear after year-in, year-out hard service. If wear has developed, an easily made adjustment restores their initial usefulness. Neither the bearings nor adjacent parts need be disturbed.

Minimum Care

Timken Bearings ask less in the way of attention than any of a car's important units. A little grease—a simple adjustment at long intervals—and they will outlive the vehicle. *Isn't that the bearing you want in your car?*

The Timken Roller Bearing Company
CANTON, OHIO

Principle and Performance

The Timken Dual Duty principle—the capacity to take, in one bearing, both radial loads and thrust loads—has made Timken Tapered Roller Bearings the outstanding choice of car builders. This same principle has won the preference of car owners for Timken Bearings because of their economy and serviceability.

Over a hundred million Timken Tapered Roller Bearings have been manufactured. The performance record of these bearings is well and favorably known. Today, the demand for Timken Bearings is greater than ever before. Check the Timken Equipment in a car before buying it. It's a pretty good guide to car value.

© 1924, T. R. B. Co.

BEARINGS

Reproduction of one of the AC 1075 Ads in The Saturday Evening Post

A good plug for Fords!

AC 1075

Here is why the AC 1075 is a good plug for Fords

Spring Terminal Clip

makes it easy to test plug or coil while motor is running and locks nut so that it will not unscrew. There is no danger of damaging connection through use of pliers as the clip keeps it tight.

Heavy Body Porcelain

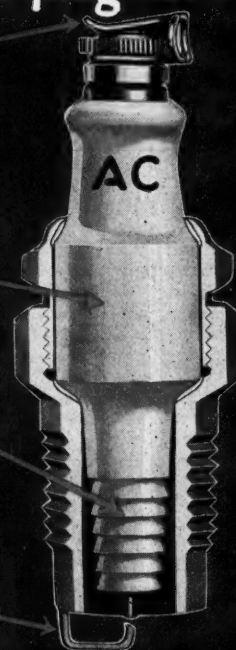
to withstand hard service—plug comes apart by unscrewing bushing.

High Temperature Fins

Plugs become shorted by deposits of carbon. The thin edges of the fins on the patented carbon proof porcelain get hot quickly and burn away the deposits, thus preventing accumulation of carbon.

Heavy Electrode

designed to form natural drain so no oil will lodge in spark gap.



INSTALL A SET OF AC 1075's TODAY—YOUR MOTOR WILL PERFORM BETTER

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

How the AC 1075 is being advertised in national publications to the Ford owner

Thousands of dealers are building a big, profitable spark plug business among Ford owners on the AC 1075—a better plug for Ford engines—and you make a larger profit on them.

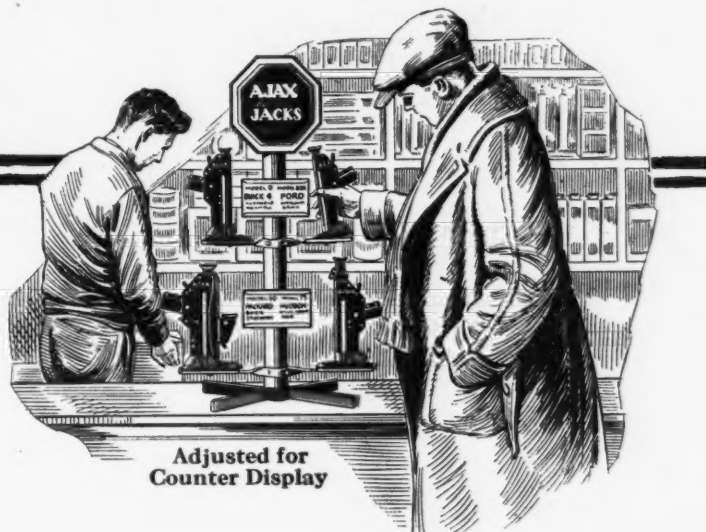
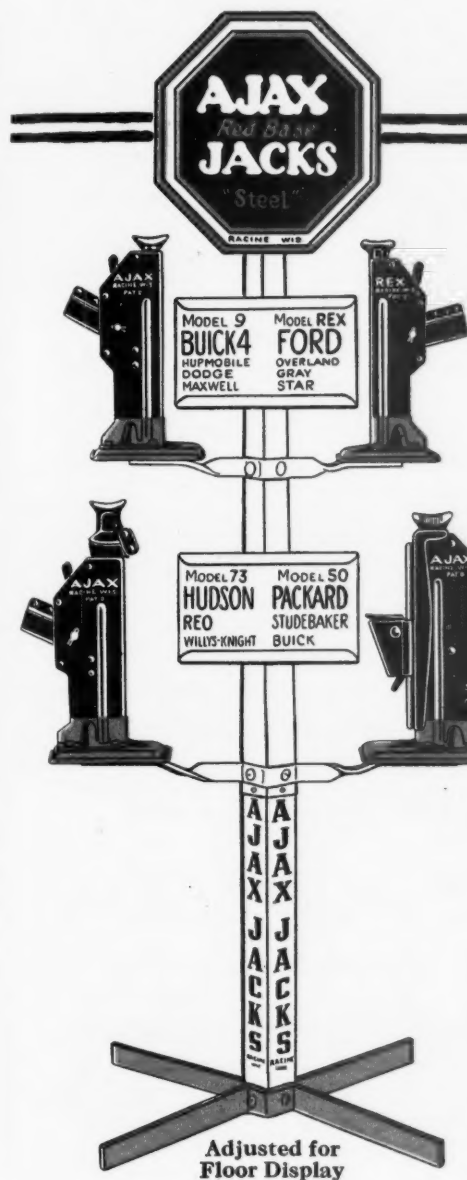
Write us for the attractive fibre poster, *in colors*, of the above advertisement which we have for you—to connect your store with this impressive AC advertising.

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

Are You Getting Your Share Of the Jack Profits?



A Complete Line
With No Slow
Moving Sizes =

Small Investment



Rapid Turnover



Larger Profits



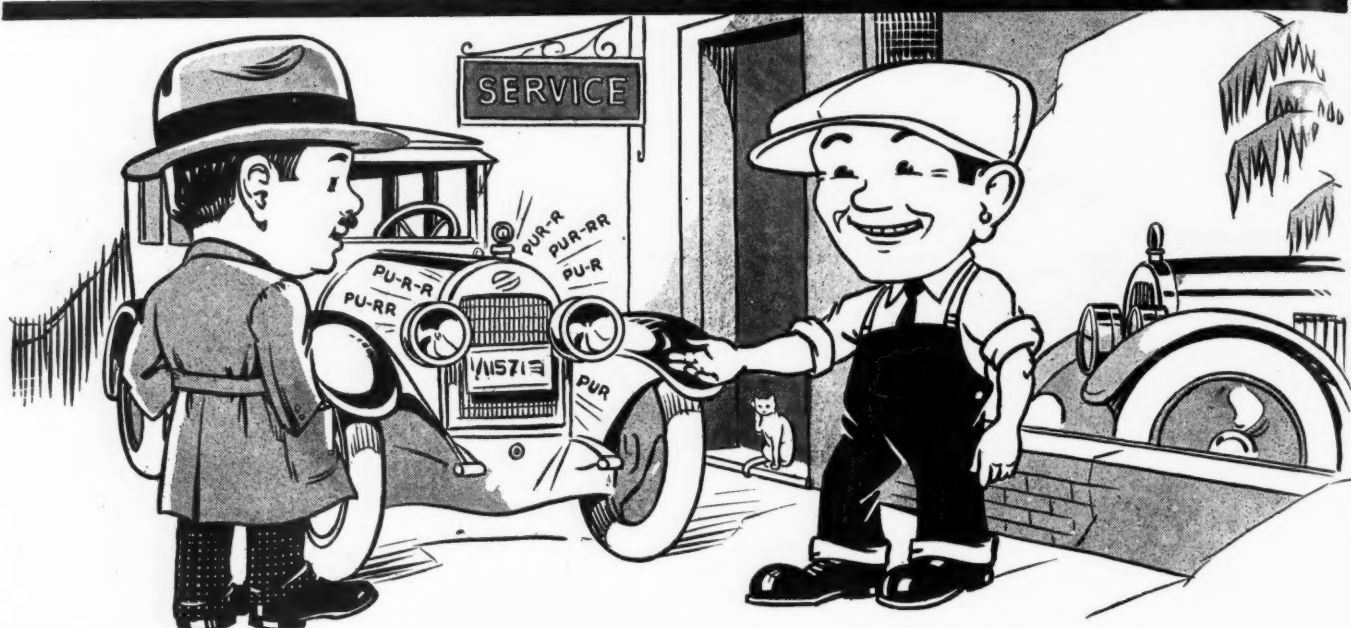
AJAX AUTO PARTS CO.
Dept. A504, Racine, Wis.



AJAX RED BASE JACKS

WITH A FLOOR OR COUNTER DISPLAY STAND

IS THE ANSWER



"All ready to go—Yes Sir! Some quiet

motor that is now and the bill's going to be considerably less than your overhaul job last spring. No—we didn't overcharge you then, either. This time we used Watkins Rebabbitted Rods. Saved you money and delivered on time. No big labor costs for scraping because Watkins Rebabbitted Rods fit quick to crankshaft. Watkins Rebabbitted Rods are completely rebuilt, that's why the job will last you a long time. From now on the boss says, Watkins Rebabbitted Rods go in every over-haul job that comes through. He's keen on customer satisfaction."

WATKINS ROD SERVICE

Means Customer Satisfaction



WATKINS
Complete **REBABBITTING**
SERVICE

Watkins Rebabbitting Service consists of complete rod rebuilding—new bearings tinned in and broached to mirror finish. New bolts, nuts and Laminated Shims are supplied and bronze piston pin bushings if used.

Due to special equipment, jigs and finishing,—installation time on a Watkins Rebuilt Rod is reduced,—no laborious time killing, lengthy scraping operations required.

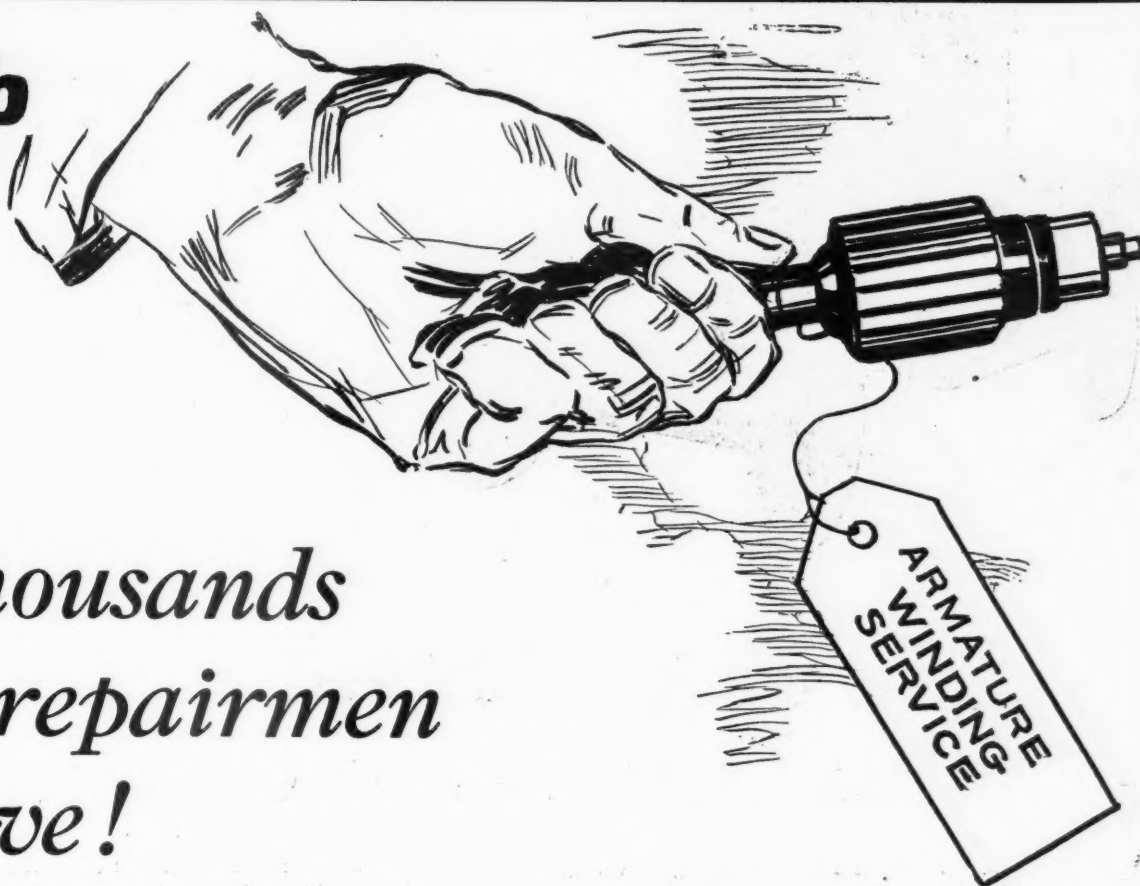
Each Watkins Plant is completely equipped to give you this specialized service. Ship your old rods into branch nearest you for rebuilding now and be ready for the rush jobs. One Day Service helps you in emergencies.

HARTFORD, CONN., Ripley Motor Services.
INDIANAPOLIS, IND., Indiana Watkins Mfg. Co.
KINGSTON, ONT., Watkins Mfg. Co. of Canada, Ltd.
LOS ANGELES, CALIF., Wright Mfg. Co.
MEMPHIS, TENN., J. B. Cook Auto Co.
NEW YORK, N. Y., Lake Sales Co.
OMAHA, NEBR., Interstate Machinery & Supply Co.

PORTLAND, ORE., Factory Motor Car Co.
ST. LOUIS, MO., H. & H. Machine Co.
SYRACUSE, N. Y., Watkins Mfg. Co. of New York.
TOLEDO, OHIO, Stewart-Burgan Co.
WASHINGTON, D. C., R-L Motive Parts, Inc.
WATERLOO, IA., All States Rebabbitting Service.

The Watkins Mfg. Co., Home Office Wichita, Kans.

**Grab
It!**



Thousands of repairmen have!

Thousands of repairmen in the past few years have grabbed the opportunity to add to their profits thru our armature winding service.

They have found it an easy source of profit to ship defective armatures to us for repair. For we are armature winding specialists—do nothing else—and due to our enormous volume of business and our special equipment can give the repairman a price so low that he can make a very nice profit on every rewind job. (The price list to right proves this statement.)

Furthermore, we keep a stock of rewind armatures on hand and can ship a rewind armature the day old one is received. No lost time!

As far as satisfaction is concerned—

**We Absolutely Guarantee
Every Armature We Rewind!**

Why not send us a *trial* rewind job? It will prove the opening of a new source of profit *for you*.

Send for our free booklet, "Low Cost Armature Winding Service"—it contains information of value to every repairman.

PRICE LIST

Net Prices

| | |
|--|---------|
| Ford Generator Armatures. | \$1.95 |
| Ford Starter Armatures. | \$2.00 |
| Any make of Two Unit Generator Armatures. | \$4.95 |
| Any make of Two Unit Starter Armature Rewound. | \$6.75 |
| Motor Generator | |
| Northeast. | \$11.00 |
| Simms Huff. | \$7.00 |
| Delco. | \$12.00 |
| Dyneto. | \$12.00 |
| Detroit. | \$12.00 |
| Any Vacuum Cleaner Armature. | \$3.50 |

H.M. FREDERICKS CO.
Armature Winding Specialists
Lock Haven Penna.



Specifications 1/2-Ton Body

Cab and bed of 16-gauge steel, bolted and riveted.

Cab frame of rolled steel angles. Heavy steel angle belt at rear of bed to prevent spreading.

Panels, 13". Flare, 6". Length, 67 1/2". Width, 44". Shipping weight, 465 lbs.

Low-Priced Steel Bodies that Outlast the Chassis

Low priced, strong, durable, light in weight, the Hyman is a truck body it will pay you to handle.

It is made in 1/2-ton and ton sizes for all light cars and of a design that fills many commercial needs.

With this body you can sell truckmen, industrial plants, retail stores—in fact the majority of light truck users.

Besides being strong and light the Hyman is neat in appearance and easily cleaned and kept clean.

The top is well-fitting, very light and affords perfect protection in all weather. It may be removed in good weather if desired and replaced in a moment when needed. Bodies are also supplied without tops when specified.

The cab is roomy and fitted with a comfortable deep spring cushion and two-piece ventilating windshield. Curtains may be had if desired.

To keep shipping costs down and make handling easier, the Hyman Pressed Body is shipped knocked down in four pieces.

We are daily appointing dealers and distributors in all parts of the country. Why not investigate? Our terms are liberal. This is a money-making opportunity requiring neither a large investment nor unusual facilities. Write.

The Hyman Pressed Body Co.
Huntington, W. Va.

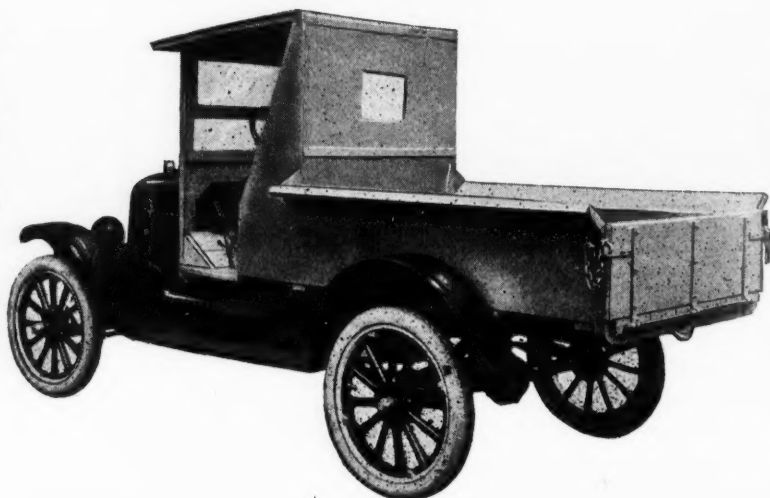
HYMAN PRESSED BODIES

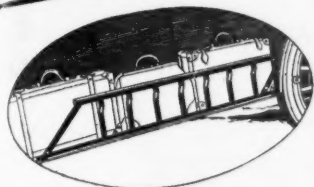
Specifications 1-Ton Body

Cab and bed of 16-gauge steel, bolted and riveted.

Cab frame of rolled steel angles. Heavy steel angle belt at rear of bed to prevent spreading.

Panels, 13". Flare, 6". Length, 96". Width, 44". Shipping weight, 600 lbs.





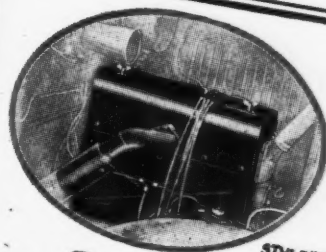
Red Cat DeLuxe Carrier

One of my best sellers. A folding luggage carrier much more popular than the old expanding type. Out of sight and out of use the way when not in use. Prices \$5.00, \$6.00 and \$7.00. Length 43", 56", 62".



Red Cat Auto Straps

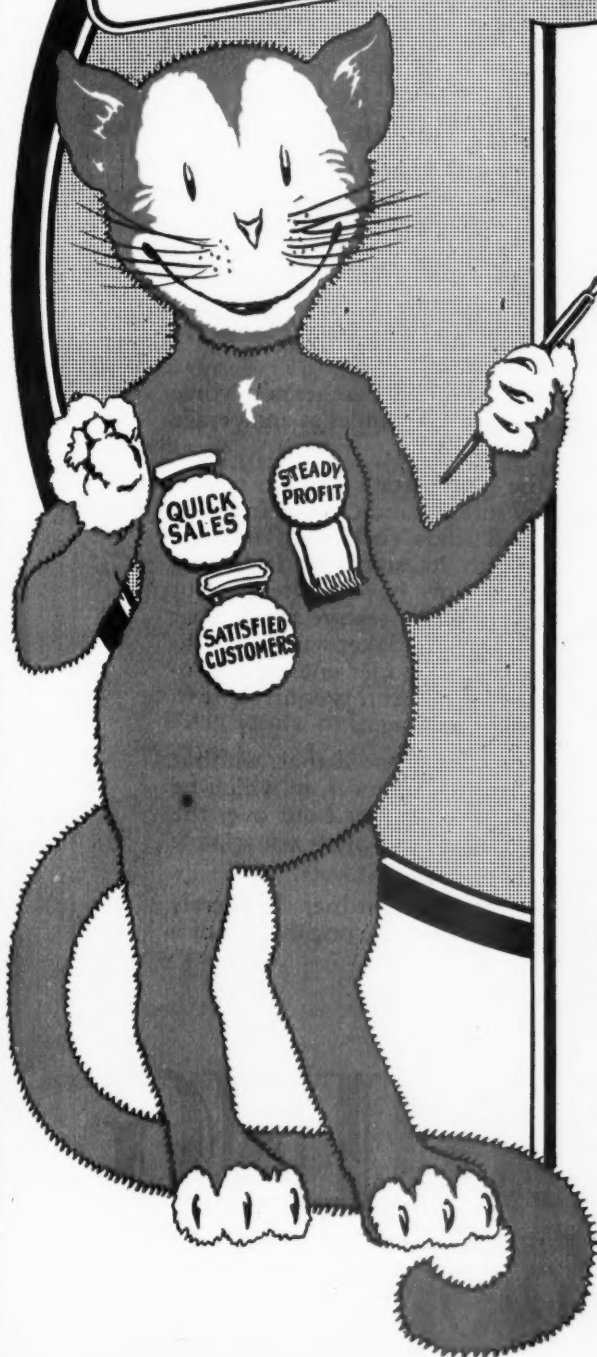
Good stout, well-made khaki straps. Metal tips and easy-working buckle. Sell them from this handout of all auto-strap merchants. Ask your jobber about it.



STYLE "A"

Red Cat Valve and Push Rod Cover for Chevrolet

Houses exposed working parts. Oil soaked felt lining furnishes constant lubrication. Keeps out dirt. Prevents wear. Silences noises. A real buy for any Chevrolet owner. List \$4.75



I am the Red Cat. My picture on a product is the Symbol of quick sales and good profits.

My boss, Mr. Roth, tests the selling qualities of each product before he puts my picture on it.

I am a live one. I never abuse a dealers hospitality by loafing on his shelves. Tie up with me and I'll show you how to make some real money.

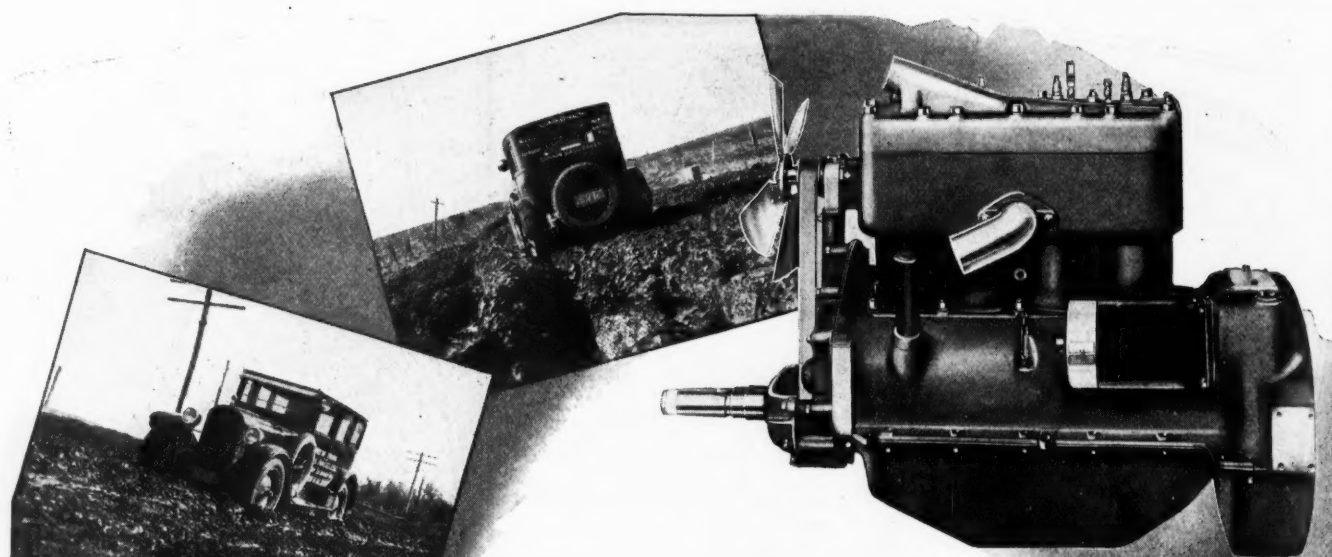
Drop me a line for full particulars.

The Red Cat

To G. A. Roth Mfg. Co.
Hastings, Nebr.

P.S.

Ask your jobber if Red Cat products are profit makers.
R.C.



More News

about the Mid-Winter Coast-to-Coast
Record Established by the
LYCOMING-Powered GARDNER Sedan

A STOCK GARDNER sedan, appropriately christened "The Blizzard," proved equal to its nickname when it battled snow, rain, ice, mud, sand and ruts in February from New York to Los Angeles in the amazing actual running time of 4 days, 14 hours and 15 minutes, a record for winter and for a sedan.

Starting in a blizzard, and fighting bad weather and worse roads, this sedan loaded covered 3,398 miles at an average speed of more than 30 miles per hour.

Practically one-third of the total distance was in mountainous country where every sort of handicap was imposed by winter weather, road and grade conditions at their worst. Yet the Gardner with its standard Lycoming 3 ¹¹/₁₆ x 5 Four Cylinder Motor, never faltered, but "displayed true pulling power" and a reserve power that was "astonishing" as "Cannon Ball" Baker wired back to the makers of the Gardner car. Gardner engineers consider that the strain imposed by this run is equivalent to three or four years of ordinary driving.

As a crowning achievement, Baker wired that, without touching the motor, he drove the same car, in which he made this record run, at 64 miles per hour over the Los Angeles Speedway, topping that off with remarkable local hill climbing tests.

This amazing achievement of the Gardner is merely further confirmation of the performance possibilities of a soundly good Four.

LYCOMING MOTORS CORPORATION, WILLIAMSPORT, PENNSYLVANIA
Makers of Fours and Eights-in-Line

LYCOMING

Motors

Announcement of Consolidation

The Federal Bearing & Bushing Corporation and the Muzzy-Lyon Company, both having felt the tremendously increasing demand for their products year after year, and both having enjoyed the greatest year in their histories during 1923, now in the sincere desire to even better cooperate with their many friends throughout the industry have deemed it wise to join forces.

The immediate advantages of this merger to the large list of manufacturers using Mogul and Federal products are many.

By adopting the very best ideas, manufacturing practices, and processes from both plants—increased production, economy, and finer quality are sure to follow.

To everyone in the industry, Mogul stands for the best obtainable in bearing metals, and Federal-Detroit immediately brings to mind Quality in Bronze. Here is a bringing together

of two specialists—one in babbitt, and one in bronze.

It gives a complete line of products under one able management and one expert supervision. The added strength resulting from this consolidation of interests and consequent elimination of much duplicated overhead in every way works toward the best interests of the customers of both organizations.

It gives a million dollar source of supply with greatly expanded facilities for high quality and quantity production at fair prices on—

Bronze Back Babbitt-lined Bearings.
Standard—Close-limit Interchangeable—Radiated.
Die Cast Babbitt Bearings and Bushings.
Bronze Bushings and Bronze Washers.
Bronze Castings.
Bronze Cored and Solid Bars.
Babbitt Metals.

The old established trade-marks, known throughout the entire country will be continued, and combined in the new trade-mark and corporate name.

New Board of Directors and Officers

| | | |
|----------------------------|---------------------------|-------------------------------|
| J. H. Muzzy, Chairman | Lloyd P. Jones, President | H. Gray Muzzy, Vice-President |
| David W. Rodger, Secretary | S. C. Reynolds, Treasurer | |
| H. W. Grant | F. C. Heath | C. R. Murphy |

FEDERAL-MOGUL CORPORATION

DETROIT, U. S. A.

The Only BAKELITE Roller-Type Timer

Biggest-value, fastest-selling timer ever put on a dealer's shelf—the new Milwaukee Timer, with the "short-proof" Bakelite case!

In April this "greater Milwaukee" is announced to almost every Ford owner who can read. Full page Saturday Evening Post April 19—American and Sunset magazines (May issues) — Country Gentleman, April 19—and the leading sectional and state farm papers (April). By far the biggest advertising drive ever put behind any timer!

And the price hasn't been raised a nickel! Still \$2—dollars cheaper than any other ignition unit with a Bakelite case. Get "set" for brisk business on the new Milwaukee. Order now from your jobber—get the Display Box on your counter—it sells 10 quick.

MILWAUKEE MOTOR PRODUCTS, Inc.

Milwaukee,

Wisconsin

new
**MILWAUKEE
TIMER for FORDS** SHORT-PROOF

Bone-dry Egyptian fiber race pressed to a tight fit in the Bakelite case. Remains satin-smooth for thousands of miles.

Fine steel contact points with welded stems. Locked in position. Extra thick throughout for longest life.

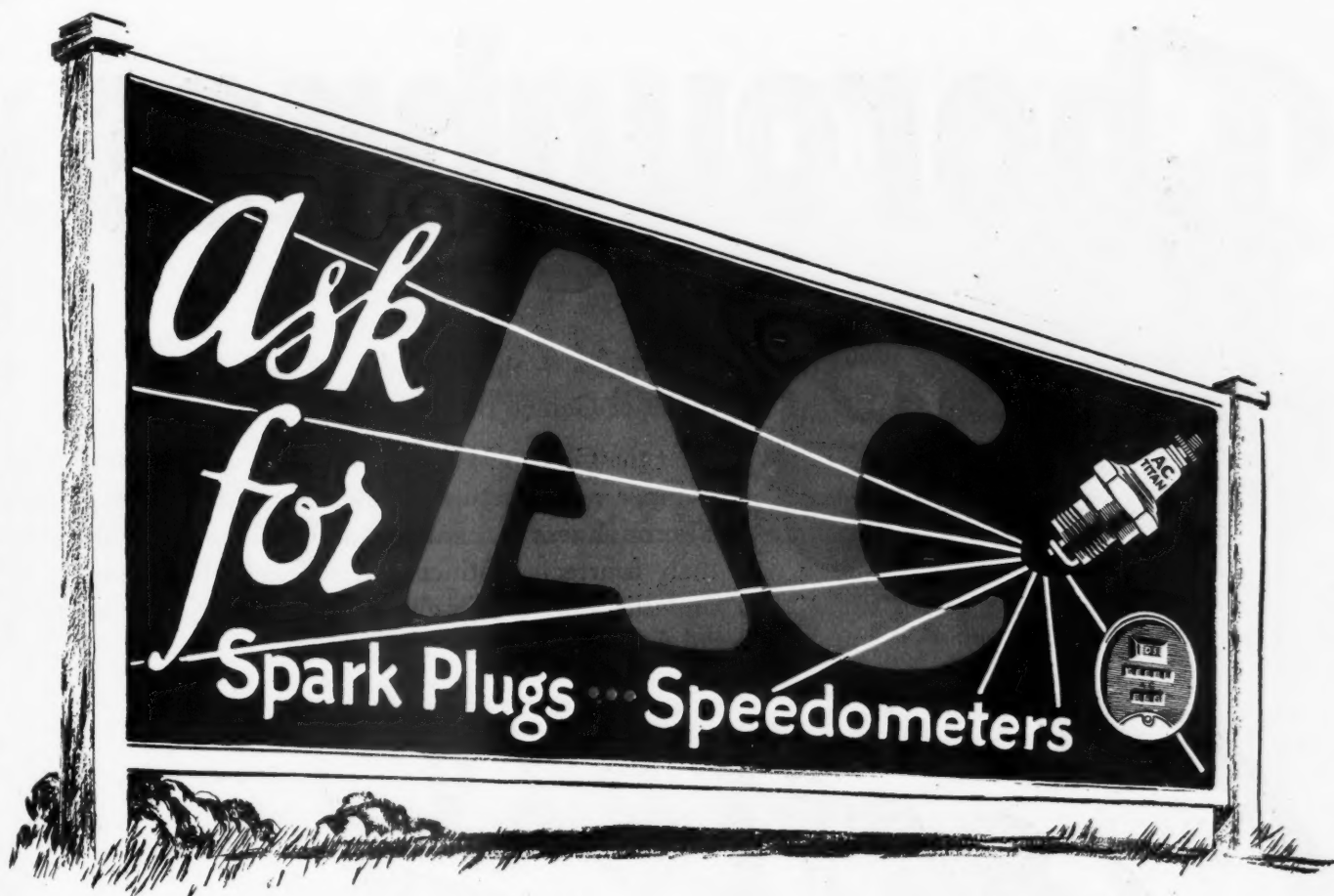
Only Bakelite case on a roller-type timer. Makes the Milwaukee absolutely "short-proof." Puts it in a class with high-priced ignition units.

Famous Milwaukee Timer brush assembly. Two bronze castings, fitted and gauged for accurate alignment. Hardened steel roller, finished like a ball bearing.

Display Cut-out—Free! Three-color Window and Counter display. Holds a Milwaukee Timer from stock. New process—oil colors, extra brilliant, washable. Sent free, postpaid. Write us direct.



No
increase
in price.
Retails
at
\$ 2
(\$2.75 in
Canada)



Working For You Everywhere—Every Day

All over America—wherever motorists travel—big, impressive painted bulletins advertising AC Spark Plugs are working every day for the dealer who stocks AC's.

National magazines, trade papers, store signs, direct mail advertising are continuously circulating millions of AC messages throughout the country—and newspapers too are spreading the AC story of superiority.

All this effective advertising works tirelessly preparing the market for the dealer who carries the full AC line and is ready to go after this profitable business.

AC Spark Plug Company, FLINT, *Michigan*

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

Thoroughness



Experience + thoroughness = perfection. That's the secret of Gemco Bumper quality.

That the Gemco Manufacturing Co. is the world's oldest bumper manufacturer, makes them first in **experience**. **Thoroughness** in manufacture is evidenced by the no less than fourteen distinct and different treatments which underlie and are responsible for the permanently beautiful finish on Gemco Bumpers.

Gemco

BUMPERS

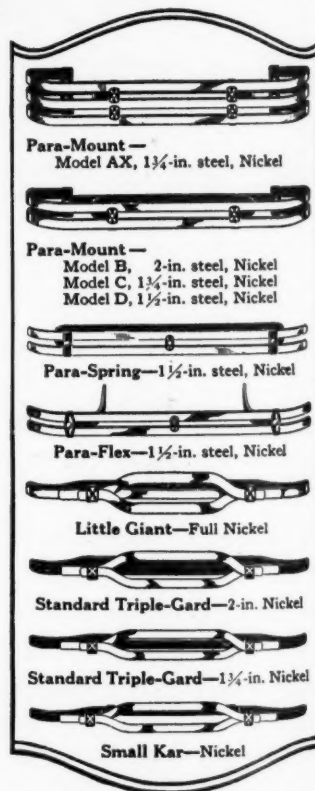
**You Can Build Business
and Hold Business With
Gemco Bumpers**

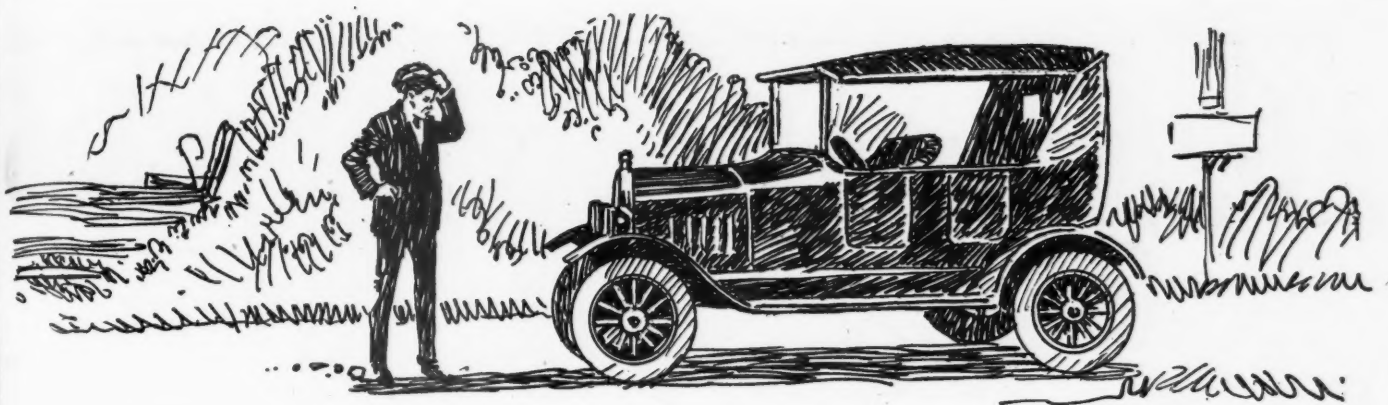
Ask your jobber or write us today for dealer proposition and catalog No. 31 showing designs to harmonize with all cars and stay-tight attachments for all models.



GEMCO MFG. CO.

760 So. Pierce St.
MILWAUKEE, WIS.





The dry tank gives a warning— eight miles of gas are still in the Vacuum-Reserve

Beside the advantages of a vacuum gas feed for Fords, Mac's Gaselevator acts as a reminder to re-fill when the gas is low.

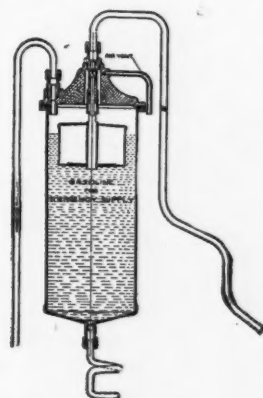
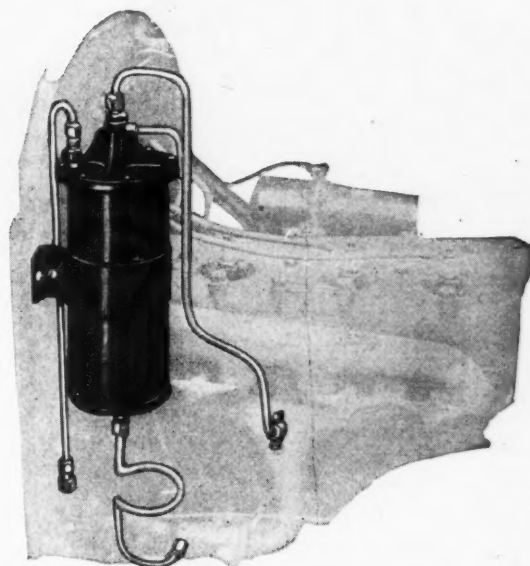
After the main tank goes dry, the engine stops. Six to eight miles of gas are reserved in the Gaselevator. By simply closing a stop-cock, this reserve supply is released.

Mac's Gaselevator uses the vacuum of the motor to bring the gas to a tank right over the carburetor. No matter how little gas is in the main tank the car can take hills head first.

Mac's Gaselevator is sold at a price that is less than half what is usually paid for a device offering only one of its features. The retail price of \$7.50 includes all the fittings needed for installation. This is a simple job taking half an hour.

Dealers and Jobbers, write for discounts and full information today. We will mail them promptly.

Mountain Accessory Company
Emporium, Penna.



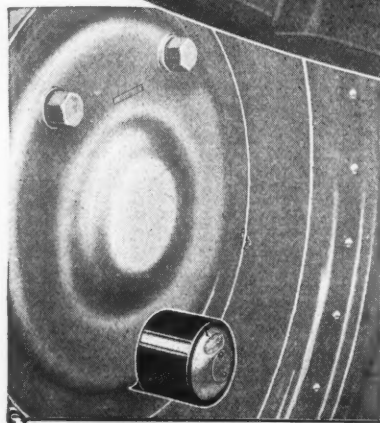
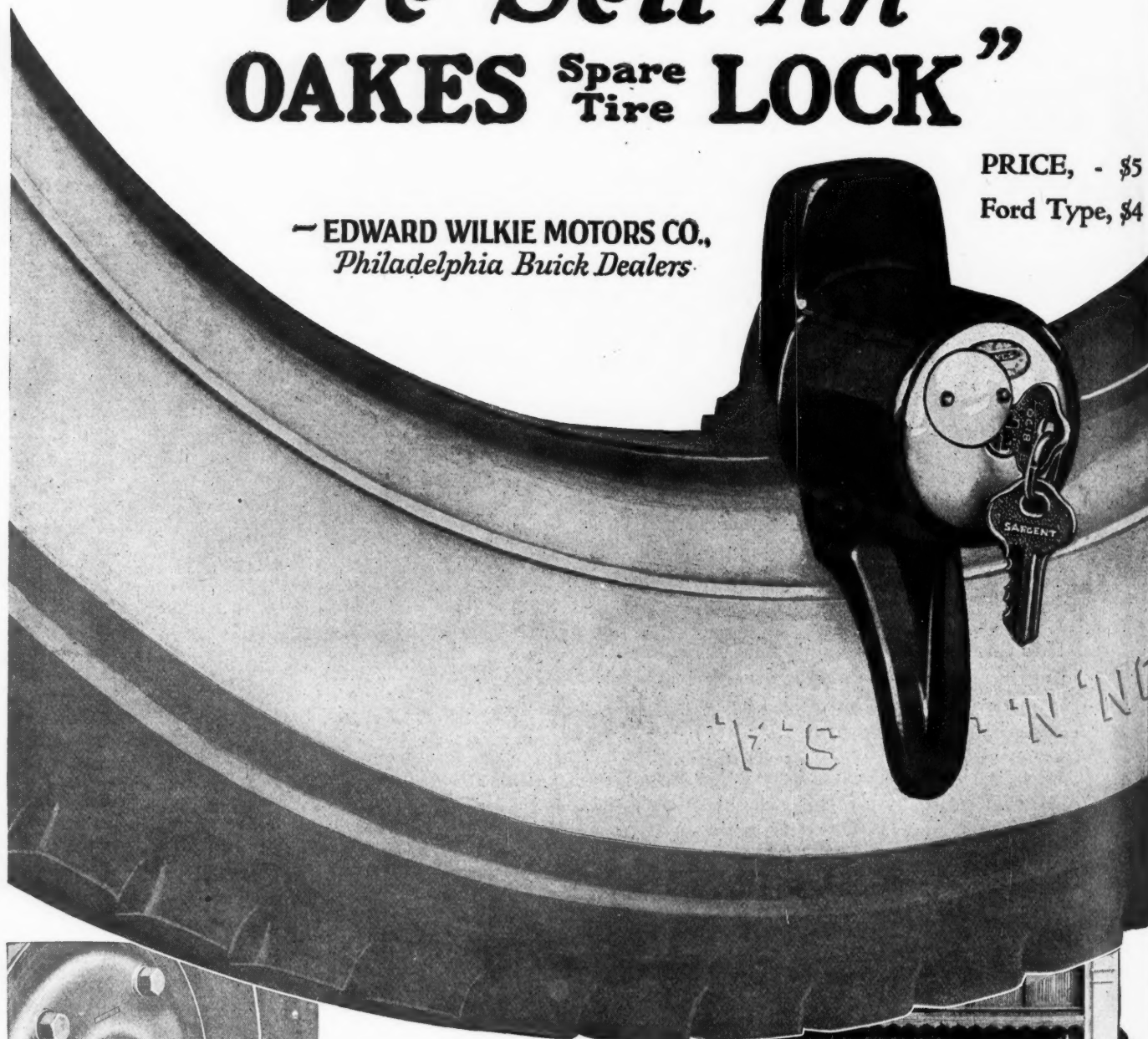
MAC'S GASELEVATOR

A VACUUM GAS FEED AND EMERGENCY RESERVE COMBINED

**"With Every New Car,
We Sell An
OAKES <sup>Spare
Tire</sup> LOCK"**

— EDWARD WILKIE MOTORS CO.,
Philadelphia Buick Dealers

PRICE, - \$5
Ford Type, \$4



There are also
OAKES LOCKS
for all types of
spare steel wheels.
Price, \$5. Bar-
arm type, \$6.50.



Let OAKES LOCKS Help Pay Your Rent!

Car Owners Want This Dependable Theft-Proof Lock

SUCCESSFUL car dealers are quick to appreciate the profits on accessories. When you sell a new car, also sell an OAKES LOCK—either spare tire or spare wheel type—along with spare tires, bumpers, spotlights, etc. You can pay your rent by selling these extras!

Read the letter below, to our Philadelphia distributor. Aggressive dealers in metropolitan cities like Philadelphia and New York down to small communities such as Provo, Utah, are steadily cashing in on OAKES LOCKS. You, too, should get your share of these substantial profits.

Simple—Practical—Durable Installed in a Minute!

The OAKES LOCK has an unbreakable malleable iron housing, with a locking unit of proved superiority. Thieves see it and pass on. Installed in a minute! A turn of the owner's key removes the lock face, thus making spare tire or wheel removable. Weather-proof—dust-proof—lasts as long as the car!

For the Cars You Sell

There are OAKES LOCKS for the cars you sell—and an unusually attractive display stand which will sell them. This silent salesman should be working for you now.

THE OAKES CO. INDIANAPOLIS
Established 1910

Oakes Locks are Standard Equipment on 15 Makes of Cars

MAIL THIS COUPON TODAY

Eliminate
Rattling Chains
Ugly Cables
Flimsy Padlocks
and other
"Makeshifts"

EDWARD WILKIE MOTORS COMPANY

1415 NORTH BROAD STREET



PHILADELPHIA

March 8th,
1924

Mr. R. S. Sayer, Jr.
1450 Fairmount Ave.
Phila., Pa.

Dear Sir:

It gives us great pleasure to write you, of our success in handling the Oakes Spare Tire Lock.

During the season of 1923, we handled as you know a great many of these locks, and as a matter of fact we delivered very few Buick cars without them.

Since the 1924 Series started, with our increased demand for cars, we have been even more successful, I believe than in the 1923 season in selling more Oakes locks with our cars. It might interest you to know that it has never yet been brought to our attention, that a tire has been stolen from any one of our customers, that has bought this additional equipment.

From the present indications, we will sell more cars and Oakes locks, this season than we have ever done before.

Thanking you for all of your past favors, and with best wishes for your continued success, we remain

Very truly yours,
EDWARD WILKIE MOTORS COMPANY

SALES MANAGER

THE OAKES CO.

3019 Roosevelt Ave. Indianapolis, U. S. A.

Gentlemen:—

We are

☐
☐

dealers for

distributors for

automobiles. Please send your proposition and free copy of "The OAKES Selling Plan".

FIRM NAME _____

ADDRESS _____

Signed by _____

Position _____

MA

WHICH SYSTEM ARE YOU USING?



The "Perhaps" System

Disordered shop,
broken promises,
disappointed customers,
money lost.



—or the

LAPS

System

With orderly stock,
prompt deliveries,
satisfied customers,
and bigger profits.

DAVID LUPTON'S SONS COMPANY

Main Office and Works: PHILADELPHIA

SALES OFFICE, 919 Majestic Bldg., DETROIT

LUPTON AUTO-PARTS STORAGE

THE GRAY GROUP for 1924

Offers You More Profit And a New Price Class

The Gray Group will fit into your expansion plans for 1924 by filling in your line with a light car that carries a liberal discount and is in an exclusive price class. There are no other cars selling today at these prices, Touring \$630, Coupe \$750, and Sedan \$895.

Gray Cars are selling fast because they combine unbeaten economy, with unusual beauty, comforts and appointments—at an attractive price.

In fact, the car-wise buyer's first thought is, "How can they do it for the money"—isn't that the kind of a product you want to sell?

Write for Gray folder with complete specifications—ask for territorial proposition and the liberal discounts. Act quickly—for contracts are being asked for faster than we can make them.



The Gray Truck

Greatly to the advantage of Gray Dealers is this sturdy economical, delivery-chassis. It sells rapidly and stays sold. Ask for a Gray Truck Folder.

GRAY MOTOR CORPORATION

Detroit, Michigan

Gray Prices at Detroit

| | |
|-----------------|--------------------|
| Touring - \$630 | Sedan - - \$875 |
| Coupe - - 750 | Truck Chassis \$75 |

Touring
\$630



MORE FOR THE MONEY THAN

THE PRICE SUGGESTS



The advertisement features a central illustration of a man in a workshop, wearing a light-colored shirt and dark trousers, focused on working with a bolt and nut. To his left is a large, stylized logo for "EMPIRE BOLTS" with "NUTS-RIVETS" below it. The logo is a shield-like shape with the word "EMPIRE" in large, bold letters. Above the main title "EMPIRE BOLTS" is the phrase "New Process" in a script font. The entire illustration is framed by a decorative border.

"—That's an Amazing Bolt"

JUST run a nut up on an Empire New Process bolt, and then on a gauge, and see if you can feel any difference. There isn't any difference—to speak of. A comparator photograph shows the thread of an Empire New Process bolt and the thread of a hardened and ground gauge to observe about the same tolerances!

The thread of the Empire New Process bolt is built up in a new way—by a new kind of tool that has no equal for precision. It is so strong that no nut can strip it. Empire New Process bolts are available to all who want them at the cost of previous Empire bolts!

RUSSELL, BURDSALL & WARD

BOLT & NUT COMPANY

PORT CHESTER, N.Y.

PEMBERWICK, CONN.

CHICAGO

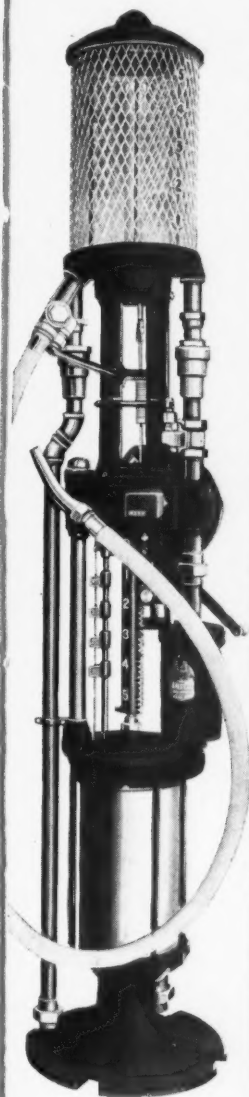
SAN FRANCISCO

ROCK FALLS, ILL.

Makers of Bolts, Nuts and Rivets Since 1845



THE DIXIE OIL CO.
Memphis, Tenn.



"Satisfactory to Us *and* praised by Customers"

So says the Dixie Oil Co., one of the oldest oil companies in Memphis.

After trying out various makes of pumps, they equipped their new station, shown above, with FIVE AMERICAN VISIBLES.

And that is the test we most desire—TRYING OUT VARIOUS MAKES. Where speed, ease of operation, continuous and most service hours per dollar of cost are considered, the American Visible always wins out.

Look on other side of this page for some of the reasons for AMERICAN SUPERIORITY.

The American policy has always been to make the BEST, not the CHEAPEST—the MOST ECONOMICAL, not the LOWEST PRICED—and USERS of the American Visible all over this country say we have succeeded.

Write for our catalog and prices.

The American Oil Pump & Tank Co.

1159 FINDLAY ST.

CINCINNATI, OHIO

American *Visible* Equipment

See Other Side



Piston Assembly and Oiling System American Visible Pump~

Just as a man's efficiency is determined by what's INSIDE his head so is the efficiency of a gasoline pump determined by ITS INSIDES.

Note the following—compare these VITAL WORKING parts with those of any other pump—

A—Piston leather of high quality, especially treated for gasoline.

B—Heavy brass coil spring—holds piston leather close against wall of brass cylinder.

C—Slots for draining leather and spring recess. Pump can be drained of water to prevent freezing without tearing down.

D—Poppet piston valve—Hand ground and tested.

E—Seamless brass cylinder with wall $\frac{1}{8}$ inch thick.

All heavy construction—total piston assembly without brass cylinder, weighs 30 lbs.—has long life and needs few repairs.

F—Oiling System—Most complete of any pump made—given proper attention, insures long life to pump with perfect and continuous ease of operation.

G—Heavy rack with cut teeth—all bearing surfaces carefully machined.

H—Threaded quantity stop rod (patented) with 20 threads to inch—affords fine adjustment to quantity stops.

These are parts of the Pump shown on other side of this sheet—parts that have contributed largely towards making the American Visible America's leading gasoline pump.

The American Oil Pump & Tank Company

1159 FINDLAY ST.

CINCINNATI, OHIO

American Visible Equipment

a SPOT SELLER!

Dealers everywhere are finding it remarkably easy to sell the sensational new

*. . . no extra fittings
to carry in stock! . . .*

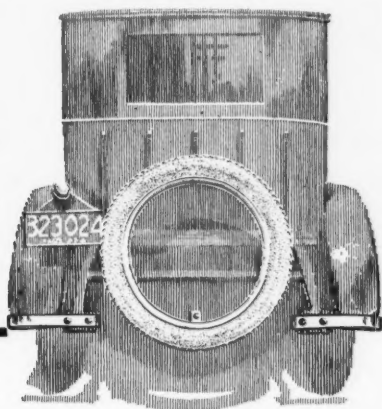
*Liberal DISCOUNTS
to the trade . . .*



*—the solution to the problem of rear-end
“PROTECTION without projection”*

This beautiful accessory sells **ON THE SPOT** because it does everything the most expensive rear bumper can do,—with none of the dangers and disadvantages of the projecting type.

Fits without extra attachments to **ANY** car equipped with standard (Hotchkiss) springs. No special tools required—you can put the pair on in 10 minutes. Just use an ordinary wrench!



When a car drives up for gas or oil, simply hold one of the FENDAGARDS against one of the customer's rear spring shackles.

“That looks fine!” he'll exclaim. “What is it?”

“That's a FENDAGARD,” you'll reply. “The new form of rear-end PROTECTION WITHOUT PROJECTION. You can't hook another car in parking or cutting in on the road. And it doesn't interfere with the spare, the gas tank or the jacking up of the car.”

“Great!” he'll say. “And what a dressed up look it gives my car! How much?”

“Only \$8 the set, complete . . .”

“Put 'em on!” he'll order.

Just try it!—get a trial set from your jobber if you want to test this selling idea. TODAY!

Sold only through **JOBBERs** and **DEALERs**. We will ship to any properly rated jobber in the United States or Canada. Write **NOW**.

FENDAGARD Sales Corporation of Springfield, Massachusetts

for Economical Transportation



Something New in the Automobile Business

Exemplifying the progressive policy of this Company, we direct attention to our correspondence course in

Merchandising Chevrolets

Practically all of the production of any automobile manufacturer passes through the hands of retail salesmen.

To an increasing extent the sales of his product depend on the quality of these salesmen.

This course further enhances the value of a Chevrolet franchise by providing our dealers with a practical means to increase the sales of their present forces, and to discover and develop new salesmen.

We will be pleased to supply full particulars of this course and other distinctive Chevrolet policies to any live business man considering applying for Chevrolet franchise.

Chevrolet Motor Company, Detroit, Mich.

Division of General Motors Corporation

In Canada—Chevrolet Motor Company of Canada, Limited, Oshawa, Ontario

Manufacturers of the World's Lowest-Priced, Fastest Selling Quality Cars

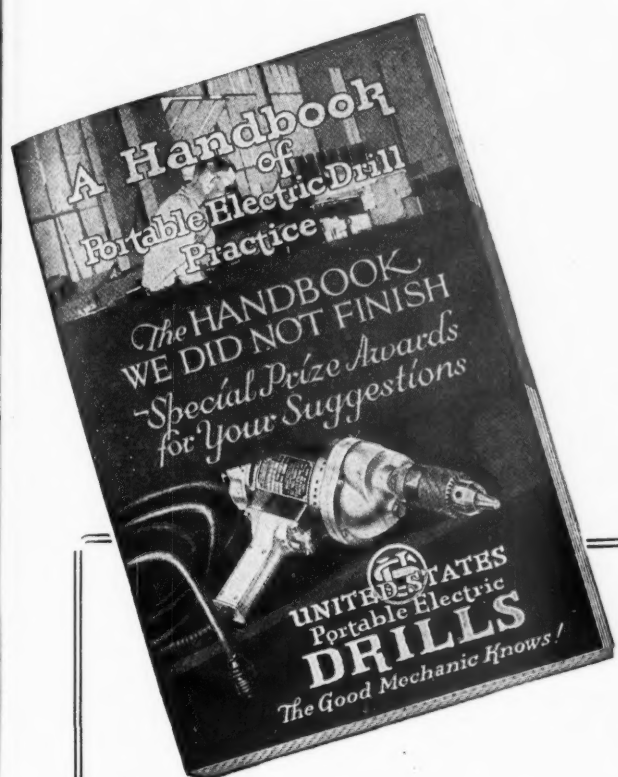
Prices f.o.b. Flint, Michigan

| | | | |
|------------------------------|-------|---------------------------------|-------|
| Superior Roadster - - - - | \$490 | Superior Sedan - - - - | \$795 |
| Superior Touring - - - - | 495 | Superior Commercial Chassis - - | 395 |
| Superior Utility Coupe - - | 640 | Superior Light Delivery - - | 495 |
| Superior 4-Passenger Coupe - | 725 | Utility Express Truck Chassis - | 550 |

Fisher Bodies on all Closed Models

The "Good Mechanic's" Handbook *Free*

And Prizes Given, Too



The three prizes we give:

1. Your choice of either a DU $\frac{1}{2}$ " Heavy Duty drill, complete with drilling stand, or a combination $\frac{1}{2}$ H. P. Grinder and Buffer.
2. All Ball-bearing type CUD drill.
3. $\frac{1}{4}$ " Automatic Drill.

The American automobile mechanic is the most resourceful workman in the world.

We know that you "Good Mechanics" know, better than we do, what can be done with a portable electric drill. We want you to help us tell the entire story. We have started the job. With the help of American mechanics, we will finish it one hundred per cent.

We have published a handbook edited by the Good Mechanics of America. But it is not finished.

We want to send you a copy of this first edition. Your suggestions will complete it. It will then be the Good Mechanics' Own Handbook. We will send you a copy free.

Mail the Coupon— No Obligation

There is no obligation to this offer. Your help is all we ask.


Your experience and the Handbook equip you to help us edit the book. Your ideas will help brother mechanics everywhere.

And in addition, you become a contestant. Good prizes will be given. Mail the coupon.

**The UNITED STATES
ELECTRICAL TOOL CO.
CINCINNATI, OHIO.**

*We want your help. Fill out
the coupon and look the
proposition over.*

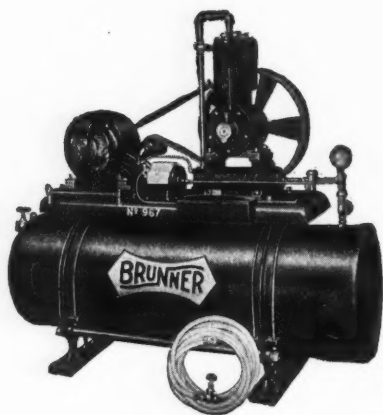
Contest Closes
MAY 1, 1924
(midnight)

Mail the coupon
today 

The U. S. Electrical Tool Co., Cincinnati, Ohio
Gentlemen:—Please send me a copy of the Handbook and prize offer.

Name _____ Address _____
City _____ State _____

More than a tire filler— a “dollar saving” shop helper!



BRUNNER Model 967

Heavy Duty Assembled Unit Powerful 2 H. P. motor, un-loader controller, Brunner Special Belt tightener. 65 gallon, 200 lb. seamless tank, capacity 7.1 cu. ft. per minute. Will easily handle up to six air drive gasoline pumps and up to twenty air lines.

(CATALOGED)
in the Red Directory

Brunner Air Compressors have a wide margin of strength. They can be and should be used for many other jobs besides filling tires.

A Brunner will work steadily all day and every day—week after week and year after year.

With its pistons fitted to half a thousandth of an inch, with its small head clearance giving full cylinder capacity at

each stroke, with its ground contact surface — smooth even and accurate — the Brunner typifies all that is best in compressor construction.

It works fast. It works noiselessly. It works smoothly without vibration. It stands up indefinitely.

A Brunner besides filling tires can be a “dollar saving” shop helper—a profit earner.

BRUNNER MFG. CO., UTICA, N. Y.

*Oldest and largest manufacturers of Garage
and Air Compressors in the World.*

Cincinnati

Kansas City

San Francisco



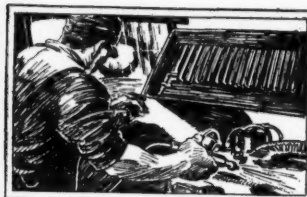
Use Air

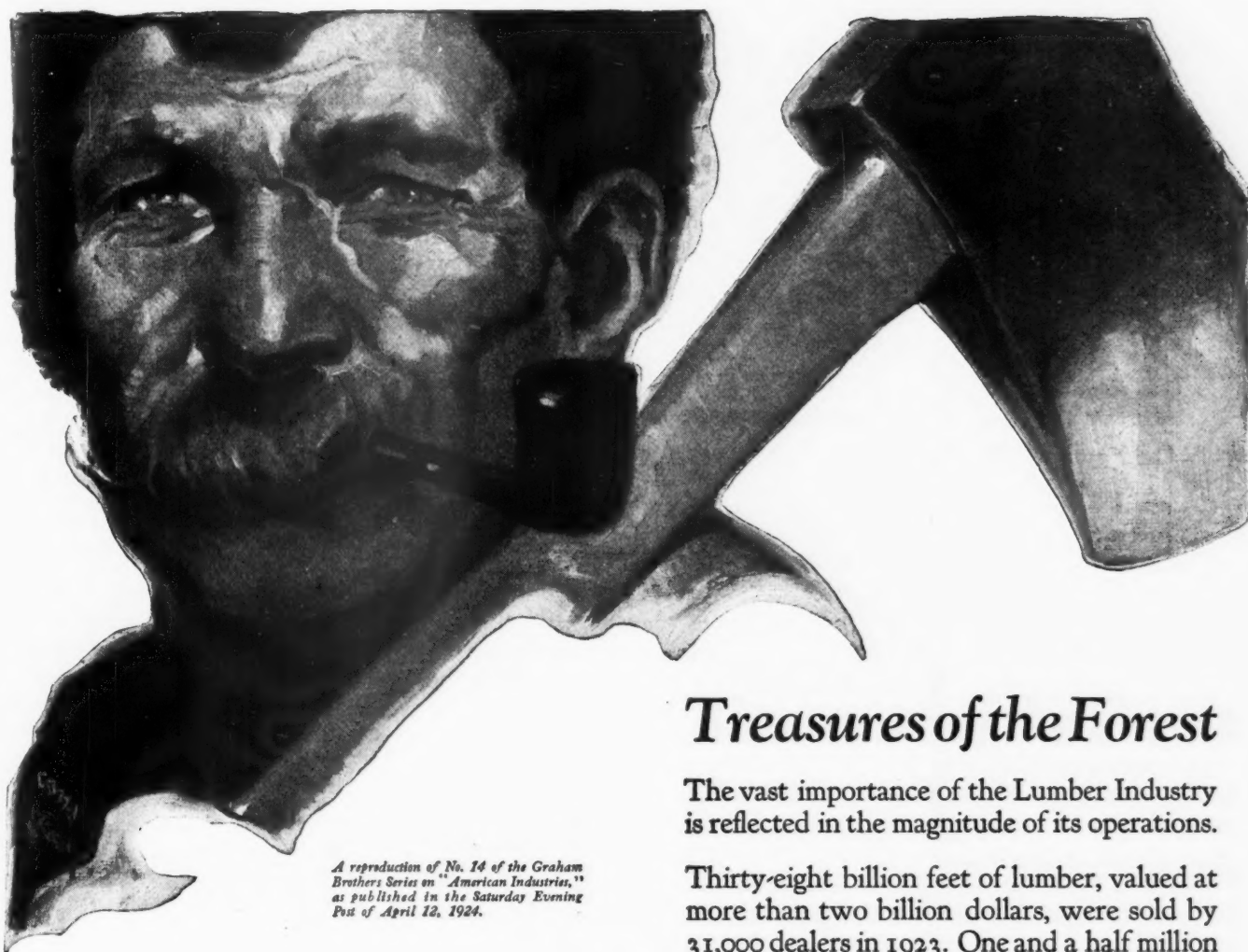
for flat rate job cleaning down the motor. The use of an Engine Cleaner is advised in conjunction with long handled scratch brush.

Disconnect one battery terminal to prevent short circuit.



Ask for the BRUNNER book “AIR PROFITS” describing many added uses of compressed air—FREE.





A reproduction of No. 14 of the Graham Brothers Series on "American Industries," as published in the Saturday Evening Post of April 12, 1924.

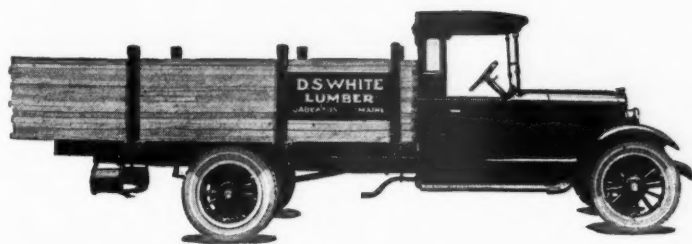
Treasures of the Forest

The vast importance of the Lumber Industry is reflected in the magnitude of its operations.

Thirty-eight billion feet of lumber, valued at more than two billion dollars, were sold by 31,000 dealers in 1923. One and a half million men and women were given employment.

Coupling its amazing energy with that of America's 20,000 Builder's Suppliers, the Lumber Industry has contributed in a notable way to the nation's wealth.

Graham Brothers Truck has proved itself to be admirably suited to the difficult haulage problems of Lumber Dealers and Builder's Suppliers. Its sturdy construction, its dependable Dodge Brothers Engine—and the fact that it is serviced everywhere by Dodge Brothers Dealers—give it a definite and unmistakable advantage in any work that demands exceptional stamina and regularity of performance.



A typical Graham Brothers Truck in the Lumber delivery service.

The Long-Bell Lumber Company's unique experience with five Graham Brothers Trucks in building its famous new city, Longview, Wash., forms a chapter in transportation history which every lumber dealer should know. The story in detail will be supplied upon request.

1 Ton Chassis, \$1265; 1½ Ton, \$1325; f. o. b. Detroit

GRAHAM BROTHERS
Detroit

GRAHAM BROTHERS TRUCKS

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE

Fords Buy \$550,000,000 Worth of Supplies

Non-Ford Tradesmen Sell Most of It—Are You Getting Your Share?



The Series of Six Stories on the Ford Market

100 Fords on the Road; Next Week—The Non-Ford Dealer and the Ford Market

The automotive merchants who "get their share" of the \$700,000,000 Ford after-market of 1924 will be those who plan NOW to get their share by going after more Ford business with well-balanced, effective selling methods during the remaining months of this year.

Plan Now to get this business

and remember that the strength of the business you build depends entirely upon the quality of the merchandise you sell. Because the Ford is a low-priced car, you are not justified in offering to the Ford Owner anything but the best obtainable to put on the car he drives.

On the basis of better business and larger profits you have a vital interest in the

Life Timer for Fords

This is not a new product. Many jobbers and thousands of Dealers know just how good it is. In service all over the country, it has achieved records of much more than ten thousand miles of travel without any attention whatever. It requires no oil. A stream of water does not short it. It is fool proof, sturdy and strong.

It wipes a bronze on brass contact. The commutator, which is of heavy Bakelite, is reversible, giving two timers for the price of one.

Lists at \$2.00

Retails for \$2.00 east of the Rockies. Large discount. If your Jobber cannot supply you write us direct.

More Jobbers Wanted

Interested Jobbers are invited to write for literature, discount and sample which is sent free.

Get your share of this business. Write today.

If you want to sell guaranteed products to the Ford Owner, you want the LIFE TIMER in your town. We guarantee every one, unconditionally.

MECHANICAL PRODUCTION COMPANY
Milwaukee, Wis.



Reproduced from MOTOR WORLD
issue of March 6th, 1924.

A Brand New Proposition

A bigger, more attractive, more profitable proposition has been developed on TITANIC Springs, and is now available to reputable dealers, garages and repairshops.

Ask any distributor for details or use coupon.

TITANIC SPRINGS

*Guaranteed forever at the hump center
Alloy steel throughout*



TUTHILL SPRING CO.

Est. 1880

760 Polk St., Chicago, Ill.

**Tuthill Spring Co.
760 Polk St.,
Chicago, Ill.,**

Gentlemen:—

Please send details of your new attractive TITANIC Spring Service Station proposition.

Name

Address

City State.....



Even on the finest Boulevard

There's Grit in the Air!

This "Grit" Is the Dealer's Opportunity

The unknowing person may say, "I drive only on paved highways. All the way on brick, concrete or boulevard macadam. There's no dust there." BUT—

If you were to tell him that there is dust in the very air in his home he will remember what he has seen in the ray of sunlight across the room.

The surface of a concrete highway wears and crumbles making a powerful abrasive. At cross roads other vehicles track the dirt across the paved road. Dust of the fields and roadside is drawn into the passing motors.

Here is the absolute necessity for The United Air Cleaner.

If one notes the dust on the engine, on the fan, on the cowl board etc., it will be brought home forcibly the extent to which heavy grit particles are inhaled into the engine.



The United Air Cleaner (not water) throws all the heavier than air particles aside before the air mixes with the gasoline for combustion.

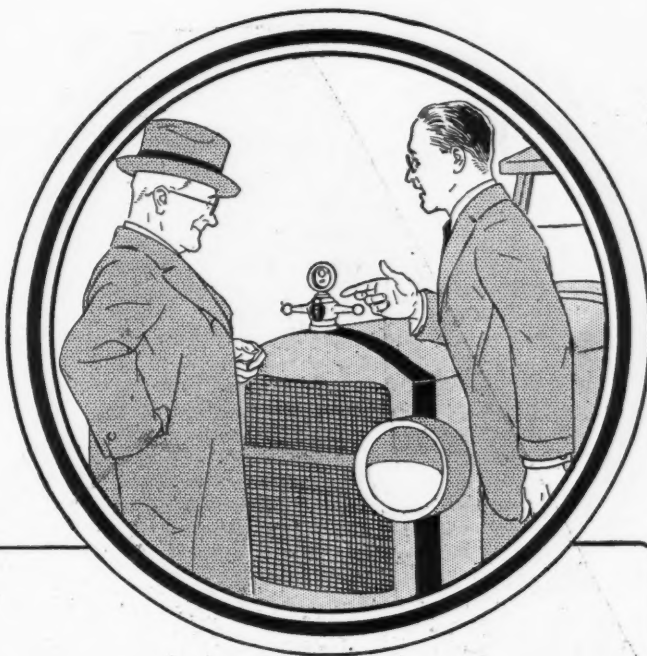
Easily installed on all cars.

A Wonderful
Dealer
Opportunity

**The UNITED
AIR CLEANER**
Dustless Air to the Motor

United Mfg. &
Distributing Co.
9703 Cottage Grove
Ave.
Chicago, Illinois

**Appearance
makes many
Car Sales**



WHEN everything has been said about the construction and performance of an automobile, the prospect usually runs a sharp eye over the lines, finish and appointments of the car you are trying to sell him. KEYSTONE adds a crowning distinction to the finest car.

KEYSTONE

THE GENUINE
RADIATOR CAP
With Initials, Monograms and Emblems

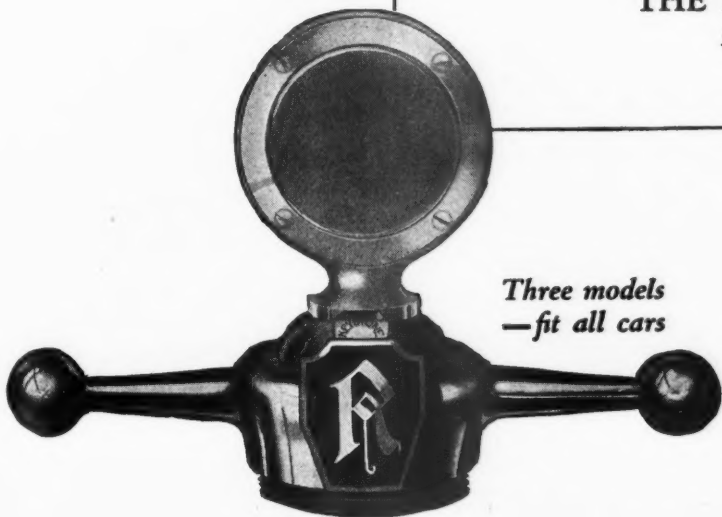
Self-locking. No installation — just screw it on the radiator neck — no keys or set screws. Permanently theft-proof because they are absolutely rust-proof and will not stick or "freeze."

THE NORLIPP COMPANY
568 W. Congress St.
CHICAGO

Ask your distributor for dealer's proposition — also window displays, counter cards, pedestals and literature, or write us

Ernest W. Lenz, Foreign Sales Manager,
280 Broadway, New York City, U. S. A.

*Three models
— fit all cars*



Patents Granted
March 20, 1917
March 1, 1921



UNIVERSAL HOSE CLAMP

Adjustable to fit any hose of any size

One size—1 to 3 inches—is adjustable to fit any hose of any size. We also make a clamp called "Junior" to satisfy the occasional needs of hose $\frac{1}{4}$ inch to $1\frac{1}{4}$ inches.

The name Universal Hose Clamp is on every box and on every clamp.

Reputation—what is it worth?

A good reputation is a merchant's greatest asset—it's worth everything.

Universal Hose Clamps started off right—and they're still right.

Their reputation is a dependable one because their quality has not been sacrificed.

They have been known to the trade for years—they have been used by the trade for years—on their reputation.

Specify the genuine Universal Hose Clamp—get and give complete satisfaction.

UNIVERSAL INDUSTRIAL CORP.

Hackensack, New Jersey

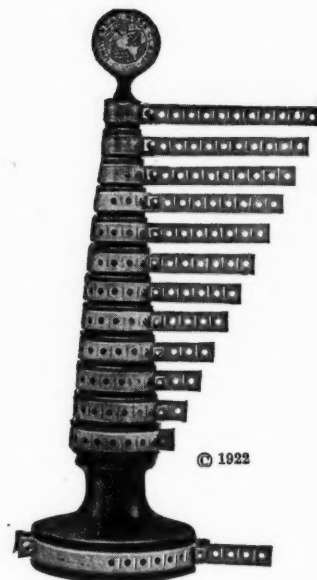
Sole Manufacturers

CHICAGO
F. C. West Corp.
616 S. Michigan Ave.

DEPARTMENT OF SALES
BOSTON
Burton Rogers Co.,
26 Brighton Ave.

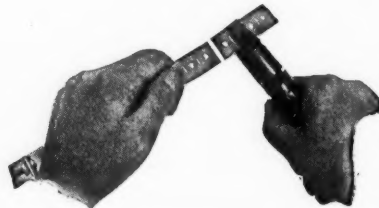
PHILADELPHIA
T. Scott Eavenson
1536 Cherry St.

DALLAS
Harry Knight
2218 Commerce St.



This Bead

An original and exclusive patented feature of the Universal Clamp is this bead which creates the pressures that makes a leak impossible.



The Scores Between Holes

Another original and exclusive patented feature — the Scores Between Holes — which insures a clean quick break-off — saving time and money.

KNOWN TO THE TRADE FOR YEARS—USED BY THE TRADE FOR YEARS



Send for this
free book
TODAY



Automotive Engineers Recommend Hall Honing

Because it is better for the motor. It does not remove the hard seasoned metal on the cylinder wall and expose a fresh loose grain texture which is subject to rapid wear.

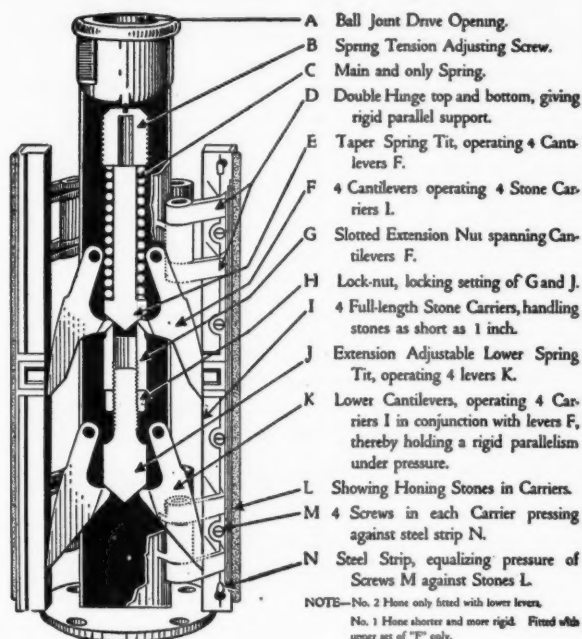
Buick engineers have recommended the Hall Method of Honing for use in all their service stations because it will restore a worn oval or tapered cylinder to a true cylindrical round with a mirror finish—at an average of 20 minutes per cylinder.

The work is done right on the chassis and there is no time spent in taking down or remounting. The owner's car need not be laid up more than a few hours—which means satisfaction. You clear the job out of the shop sooner and make a tidy profit within the flat rate system.

Send for our free booklet that gives all details and tells how a \$50 investment will increase your business and profits.

THE HALL CYLINDER HONE COMPANY
435 Dorr Street Toledo, Ohio

In Canada—Hall Gear & Machine Co., Toronto, Ontario

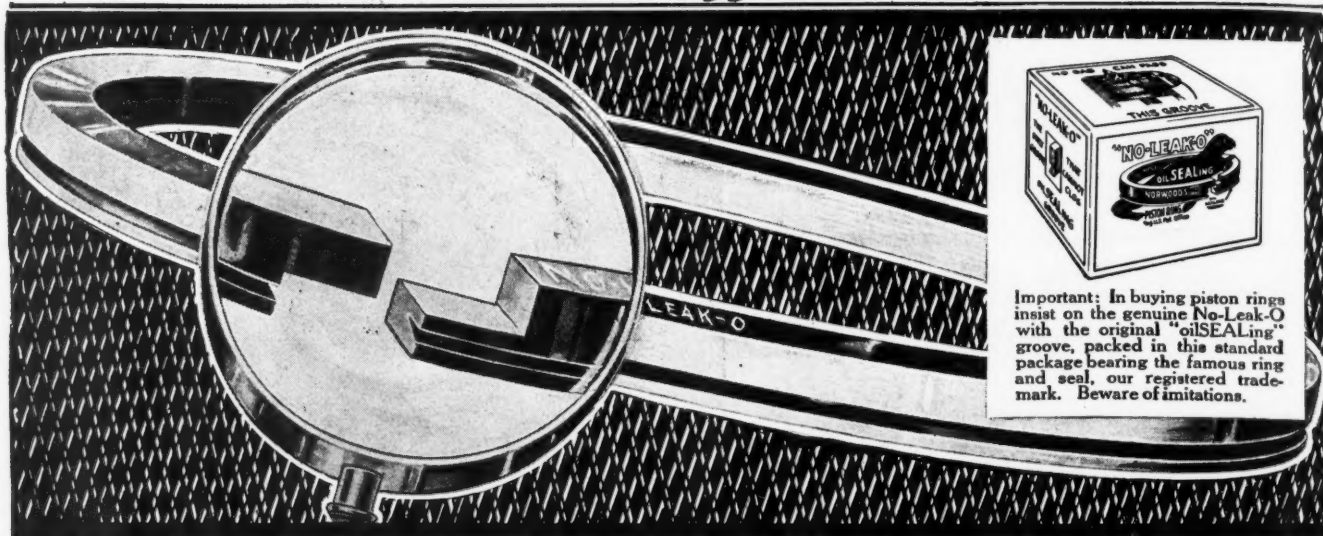


Parallel Expansion of Stones

The expansion in the Hall Hone is controlled by one spring in the center of the hone body. Each stone receives an equal pressure to an equal distance. Each stone is rigidly hinged at top and bottom to prevent tipping or following a tapered cylinder. By soaking stones in kerosene, all cuttings remain on the stone in the form of paste and do not drop into the motor bearings.

the seasoned metal is but skin deep—don't waste it

An Automobile Mechanic Suggested this Advertisement



Important: In buying piston rings insist on the genuine No-Leak-O with the original "oilSEALing" groove, packed in this standard package bearing the famous ring and seal, our registered trademark. Beware of imitations.

*1 satisfied NO-LEAK-O customer sent
10 friends for NO-LEAK-O installation!*

"No-Leak-O Rings are certainly business getters, as for instance—one man that was using No-Leak-O Piston Rings sent ten automobile owners to our place of business to have these rings installed." (Name upon request.)

Read the Reasons

1. Individually cast in one piece.
2. Made of finest close-grained tough grey iron.
3. Turned finish for quick seating.
4. Equalized pressure on cylinder walls.
5. The perfect oil seal means perfect combustion.
6. The original patented non-clogging "oilSEALing" groove insures perfect lubrication, prevents leakage due to worn or warped cylinder walls. Not a mere oil scraper.
7. The perfect fit plus the constant oil seal made possible by the angled groove makes it gas and oil tight under all conditions.
8. No-Leak-O service is unexcelled. Prices 35c and up.
9. By reversing the top No-Leak-O ring, with the groove toward the firing chamber, kerosene and unburnt gasoline is kept out of the crank case.
10. Standard replacement ring for ten years.

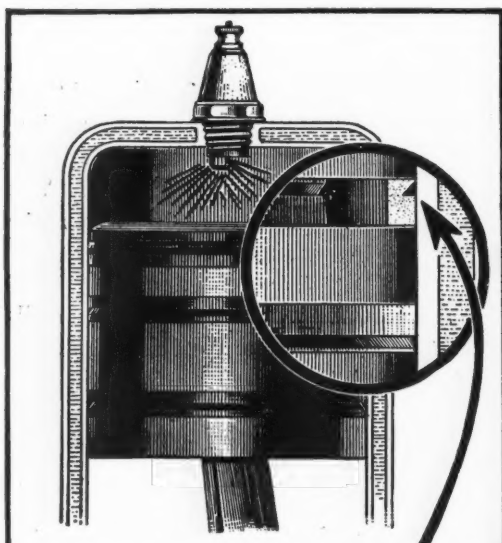
Write for valuable plain-language literature and booklet "How to Fit Piston Rings." Absolutely free. Let us tell you how our liberal dealer proposition can increase your profits.

Prices 35c and up

No-Leak-O Piston Ring Co.

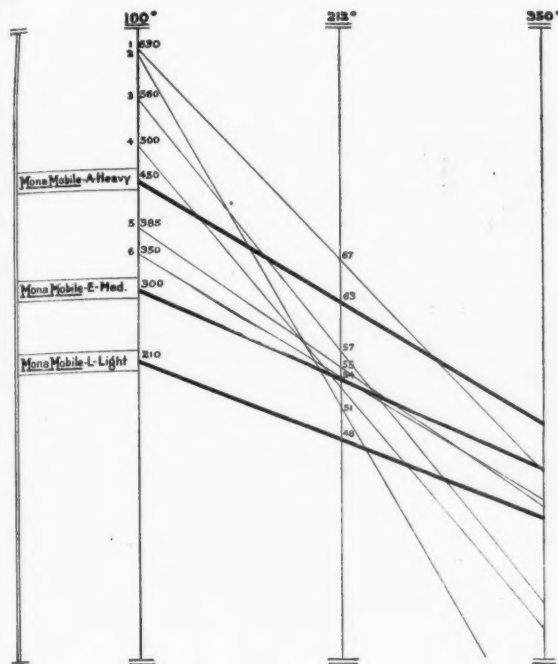
Dept. 365 Muskegon, Mich.

Copyright 1924, No-Leak-O



No Gas Can Pass this Groove

NO-LEAK-O PISTON RINGS



Viscosity or Body Chart

The light lines show actual laboratory tests made on six well known oils. Compare them with **MonaMobile** at motor temperature.

Why MonaMobile Motor Oils ~ make Customers and Keep them!

You know that you can't judge the lubricating qualities of an oil by its looks. The real test is under heat by actual use in a motor. That's where **MonaMobile** Motor Oils prove their outstanding superiority! They hold their viscosity or "body"—lose less of their lubricating properties as motor temperatures go up. When you test oils at 100°, 212° and 350°, it is easily proved which oils have a gradual "break" and will stand up longest and best under operating temperatures. The chart opposite shows the quality of **MonaMobile** Motor Oil!

Your customers may know nothing about "viscosity" but the first time they use **MonaMobile** Motor Oil they find it lubricates properly and lasts. That's why they become regular customers!

An Attractive Sales Franchise! To Garage, Repair Shop and Tire Shop owners we have the most attractive kind of a sales proposition to offer. It's one that will make customers and keep customers. It's one that you'll be glad to consider. Send us a card right now for full particulars!

MONARCH MANUFACTURING CO.

Council Bluffs, Iowa

Toledo, Ohio

Pacific Coast Division—

MonaMobile Oil Company

San Francisco

Los Angeles

MonaMobile

OILS & GREASES

"Ever Since the Birth of the Industry"



DURANT STAR FLINT SIX ROADKING SPEED TRUCK



VERY Durant Product provides a big opportunity for men who know how to merchandise cars. Good merchandisers in the passenger car and speed truck business are meeting with great success with the Durant Products listed above.

Send for a description of each line—a money-making territory near you may be open.

DURANT MOTORS, INC.

Sales Promotion Division
Long Island City, N. Y.

Manufacturing and Assembly Plants in:

ELIZABETH, N. J.
LANSING, MICH.

OAKLAND, CALIF.
LEASIDE, ONTARIO

MUNCIE, IND.
FLINT, MICH.

LONG ISLAND CITY, N. Y.
BRIDGEPORT, CONN.

For Your Preferred Customers



When it's Time to Re-tire
Get a Fisk
Trade Mark Reg. U. S.
Pat. Off.

EVERY dealer has a varying proportion of his regular trade that demands the best tires money can buy, best for mileage, best for riding comfort, best for safety, freedom from inconvenience and delay, and best for appearance.

No tire made today can meet and fulfill all these requirements as completely and as cheaply as Fisk Cords.

No tires ever gave greater satisfaction than Fisk Cords.

These statements are true and provable by actual records. Could any points be more important than these for you to consider in handling a line back of which you, as an individual, must stake your reputation?

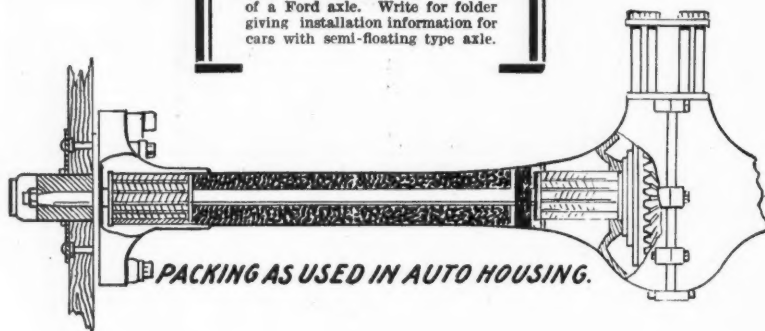
Fisk Cords present an excellent opportunity to build a sound business netting substantial, increasing profits.

The Fisk Tire Company, Inc.
Chicopee Falls, Mass.

Sell Fisk Cords

EASY TO INSTALL

On Fords—Remove wheel and pull out roller bearing. Be sure to remove any steel or felt washers behind roller bearing. Force segments of packing into housing, using roller bearing or special tool that may be had for \$2.00. We strongly recommend packing felt washer ahead of packing. Then replace bearing and wheel. Thereafter give proper attention to roller bearing grease cup. Supplied in cylindrical segments of suitable lengths. Two cylinders will fill one side of a Ford axle. Write for folder giving installation information for cars with semi-floating type axle.



PACKING AS USED IN AUTO HOUSING.



a sure, permanent way to stop "grease throwing"

Aside from the mess caused by oil or grease leaking out of the rear wheels, known as "grease throwing", this common fault is really dangerous. A slipping brake band is no joke. Grease, thrown from the differential, often works its way into the bands and causes slipping.

"Peace at Last" Packing seals these leaks tightly and permanently. It is easily and cheaply installed. It does not wear, it saves tires, and is a positive retainer of grease in the differential.

"Peace at Last" Packing is put up in cylinders about seven inches long selling at 75c each—12 cylinders packed in display container.

Dealers and jobbers—Write for full information and the liberal trade discounts today. Ford Service Stations—This packing should be of especial interest to you. Write today.

LIBBY MANUFACTURING CO.
Plainfield, N. J.

Price \$ **5.**



Easy, clean, safe tire changing

THIS RED GIANT RIM TOOL makes the messy, tedious job of changing tires simple and easy, and safe for the tires. Split rusty rims and tight fitting tires are easily removed in a few moments!

Operates on a three point suspension and therefore cannot pull rim out of shape nor break or bend it no matter how great the strain. Reversing lugs spread or contract the rim equally and automatically lock at each stroke of the lever.

Folds up compactly to fit tool box. Gives a lifetime of service.

Many thousands sold by Dealers in all parts of the country. Order from your Jobber.

Red Giant Tool Corporation
Lynchburg, Va.

RED GIANT



Dirt can't get in!

ALL moving parts are enclosed in the original Auto-Hone—

There is no open construction to admit dirt, grindings and other foreign material that plays such havoc and reduces efficiency.

The closed construction is a guard against accidental abuse.

Solid—compact—secure and permanent—the original Auto-Hone operates better—lasts longer—therefore costs less in the end.

It is a quality hone built for long, enduring service.

Get the genuine—original Auto Hone and make a bigger profit.

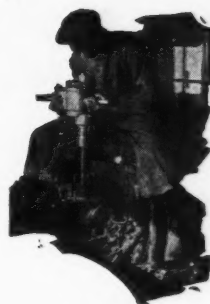
At all good jobbers or write direct.

THE AUTO HONE CO., Inc.,
1137-39 Main St., Buffalo, N. Y.



MADE IN
BUFFALO

Regrinding cylinders the Auto-Hone way is a matter of a few minutes to a cylinder without removing the engine bloc from chassis.



NO EXPERT HELP NEEDED. The Auto Hone is designed to remove metal as well as burnish and polish the walls. Pressure on stones is regulated from driving end of the tool. As the stones are forced out radially, the Auto-Hone centers itself. Auto Hones are made in 4 sizes:

Type A Price \$85.00 for cylinders 2 13/16" to 3 3/4" bore.

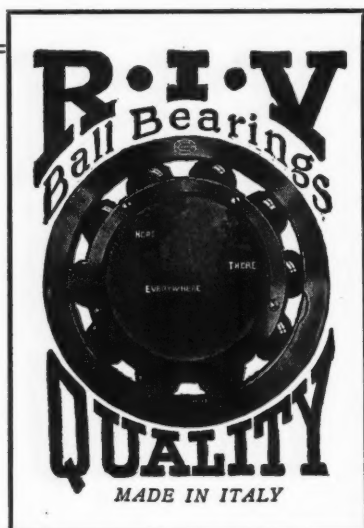
Type B Price \$95.00 for cylinders 3 1/2" to 4 1/2" bore.

Type C Price \$90.00 for cylinders 3 3/4" to 3 1/2" bore.

Type D Price \$100.00 for cylinders 4 1/2" to 5 1/4" bore.

A complete illustrated direction sheet accompanies each tool. It enables you to do perfect work from the start. Don't overlook this opportunity. Send your order in or write for information today.

Their Reputation Makes Sales Come Easy



THE distributor of R. I. V. ball bearings knows he has a product which sells without resistance. R. I. V. quality is known and sought after by car agents, car owners and fleet operators.

You never have to apologize for offering the best—especially when the best costs no more.

We still have room for distributors in some important cities of the United States. The R. I. V. proposition is square, the profit is right, the service instantaneous for all the popular sizes.

Why not write us now for an agency connection—before the season gets too far along?



Fisk Bldg., 57th St. at Broadway, New York City.

Branches: Chicago, Detroit and San Francisco.

And now *Usaco* Pioneers with Plate Valves

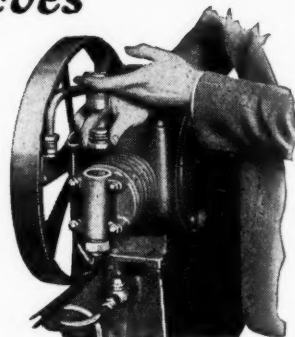
Years Ago Usaco perfected the first self-contained fully automatic compressor.

Today two stage compressors are made and recommended by practically all air compressor manufacturers.

And Now, Usaco raises another new standard in using plate valves, for the first time in a tire inflating compressor. Enormous production, specialized effort, and a policy to use the best obtainable, even at higher cost, has made it possible to incorporate them in Usaco Compressors.

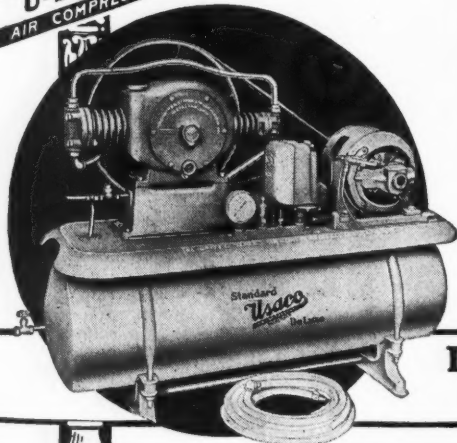
Among many other Usaco features are:
Rigid Piston Assembly—eliminates all possibility of piston slap or misalignment.
Regulated Pin Splash Oiling System—Bearings flooded with oil thrown by splash pins and diverted to proper points by baffle plates.

Write NOW for complete facts about the compressor with these exceptionally efficient valves.



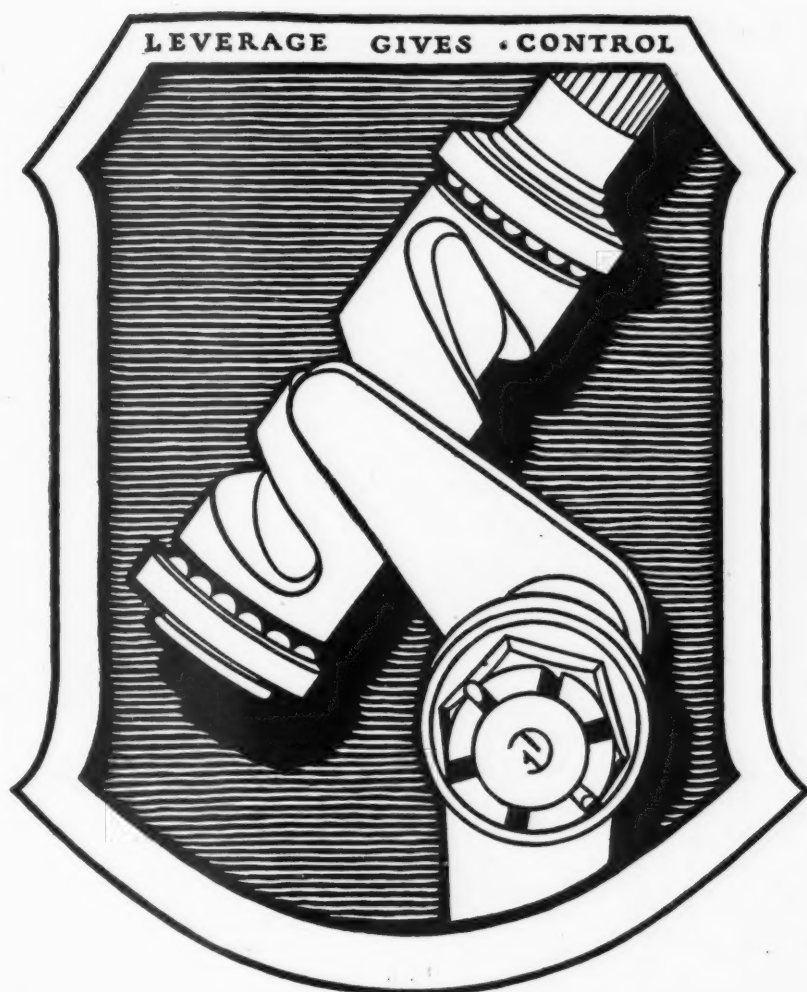
To change a Usaco Plate Valve simply loosen nut, swing intercooler aside, — insert valve assembly and gasket, — then replace intercooler and tighten nut. Simple—no seat to grind—no possibility of leaks.

Usaco
U-Say-ko
AIR COMPRESSORS



The United States Air Compressor Co.
5304 Harvard Ave. Cleveland, O.

**Pioneers ~ the World's Largest Manufacturers
of Two Stage Tire Inflating Air Compressors**



YOU STEER *ALL* THE TIME

WHEN you drive an automobile, you've got to steer all the time. This physical strain, now increased by balloon and balloon-type tires, is being realized by car-owners. Easier, better steering is being demanded—and Ross *supplies* it!

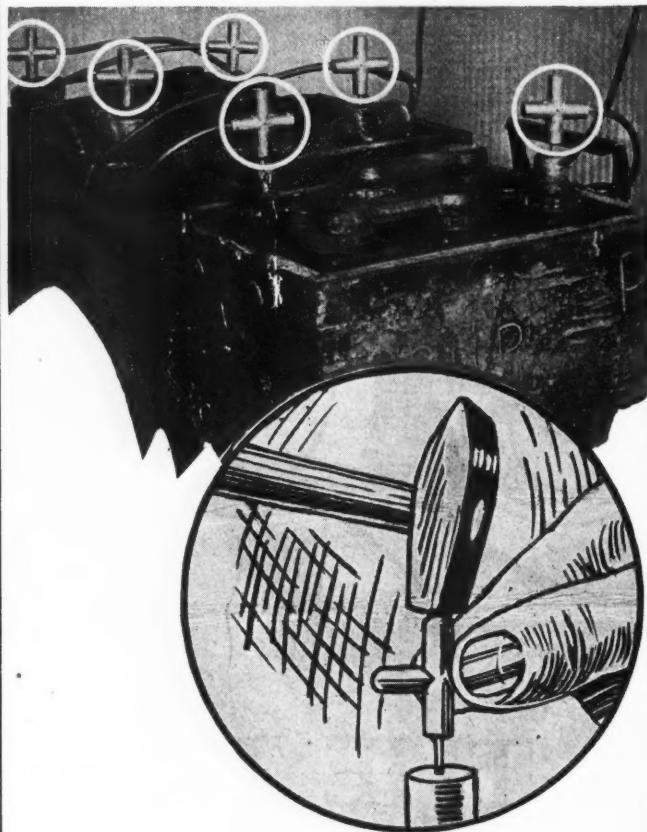
Write for the facts

ROSS GEAR AND TOOL COMPANY, 400 Heath Street, Lafayette, Indiana

ROSS
CAM and LEVER  **STEERING GEARS**
EASIER STEERING LESS ROAD SHOCK

SHURO

BATTERY CONNECTORS



New Low Prices

\$1.80 a box or \$16.00 a hundred is the new price of Shuro Battery Connectors. At this price, nobody wants to use any other kind.

Tap SHURO into the battery terminal—like a nail in a block of wood. A POSITIVE METAL-TO-METAL CONTACT.

Completely eliminates possibility of loose, high resistance connections—always present with clips. A slight twist removes it, instantly. Made to last—steel pins heavily lead-plated and hardened-acidproof. Each connector consists of two pins (crosses) and 15 inches of rubber-covered wire.

SHURO is replacing clip connectors everywhere. Give them a trial.

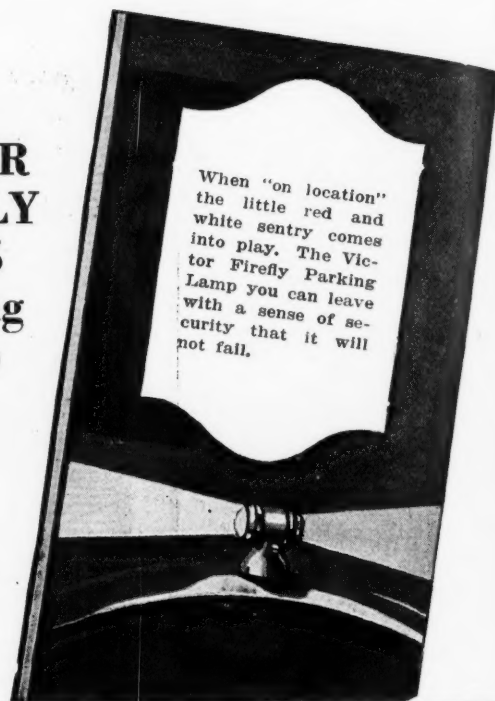
Buy Electrical Equipment from Your Jobber!
—and buy it for **WHAT IT WILL DO!**

THE BURTON-ROGERS COMPANY
Sales Department Hoyt Electrical Instruments
26 Brighton Ave., Boston, Mass.

Hoyt Instruments may be purchased from your jobber.
Branch Offices and Distributors in all principal cities.



VICTOR FIREFLY No. 45 Parking Lamp



A Miniature Beacon

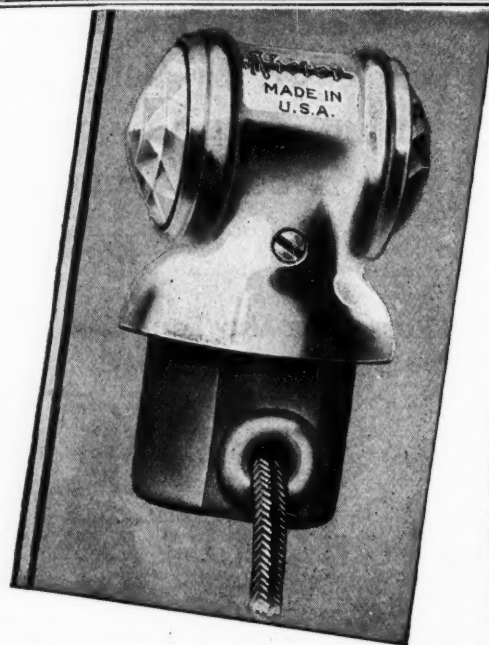
A little beauty—made and finished like a piece of jewelry.

The Firefly is a casting highly polished and fitted with imported red and white jewels. A husky nut anchors it securely to the fender and also acts as a protective housing for the cable. It consumes a very minimum of current but casts an intensified light to the front and rear.

A small item that fills a big demand. A fast seller and a profit maker. Write for the Victor catalog today.

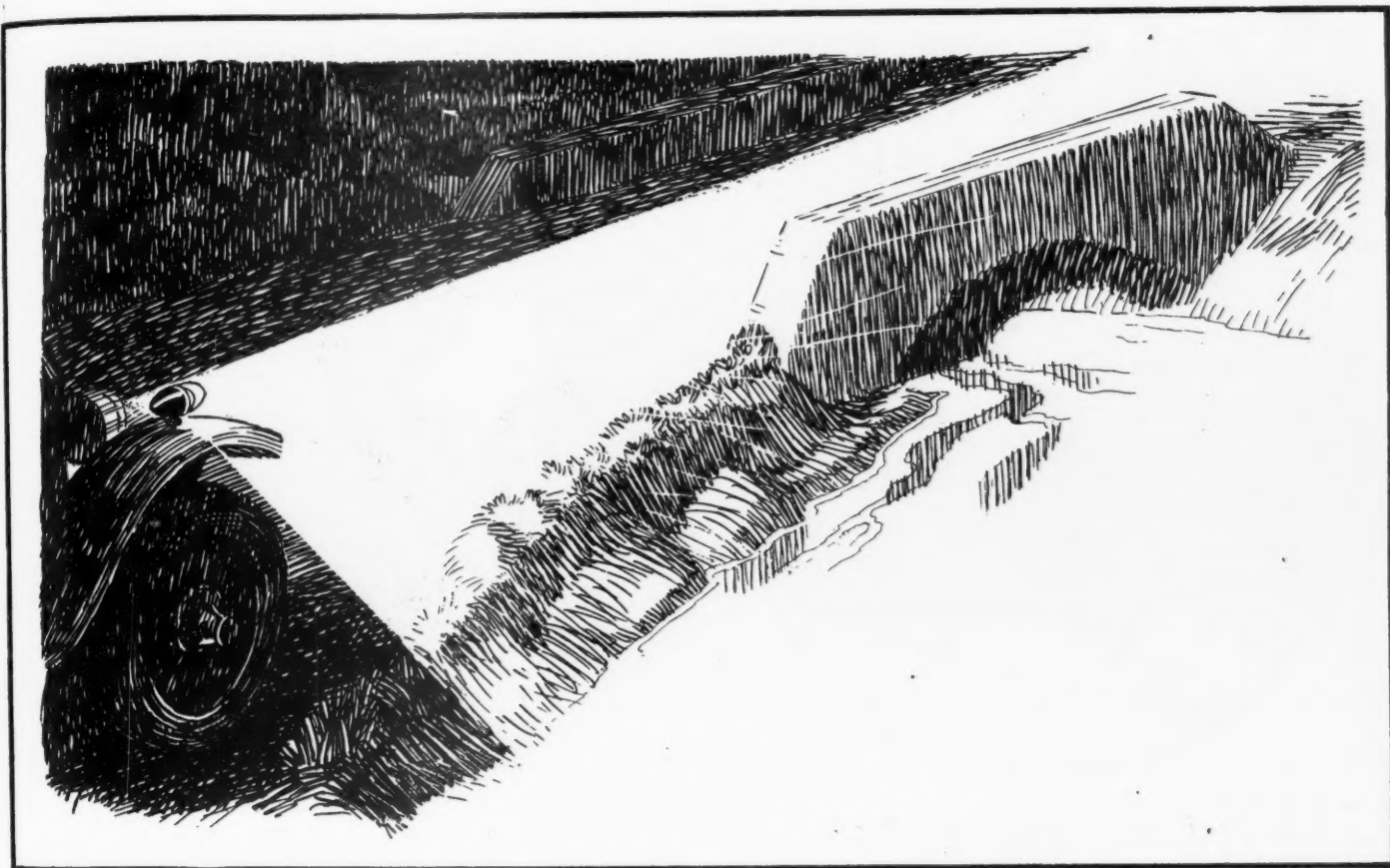
The Cincinnati Victor Company
714 Reading Road, Cincinnati, Ohio

Victor PARKING
LAMP



Actual Size

The motorist who wants good lighting equipment will be interested in the Victor Firefly and the No. 100 Spot Lamp. These two represent the finest fixtures that can be placed on a car.



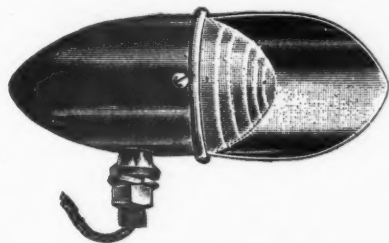
Danger can't hide from this ROAD LITE!

Curves — culverts — obstructions and danger points leap into view.

It shows up the right side of the road so that you can see *everything* 60 or 70 feet ahead.

For night driving it is invaluable. It is controlled from the dash — at will — and is easy to install.

Popularly priced at \$4.00 — it



Jacobs Auto Safety Lamp Co.
BLACKSBURG, VA.

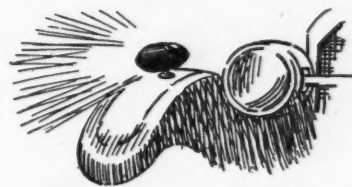
comes complete with wire, switch, screws, 21 candle power bulb, ready for use.

In nickel or black—as desired.

Road Lite is sold only through legitimate jobbers, but if your jobber is out of stock we can bill him and ship you direct.

Put in a stock of Road Lites—they'll sell for you—fast.

\$4.00



Road Lite solves the road lighting problem as far as the "ditch" is concerned.

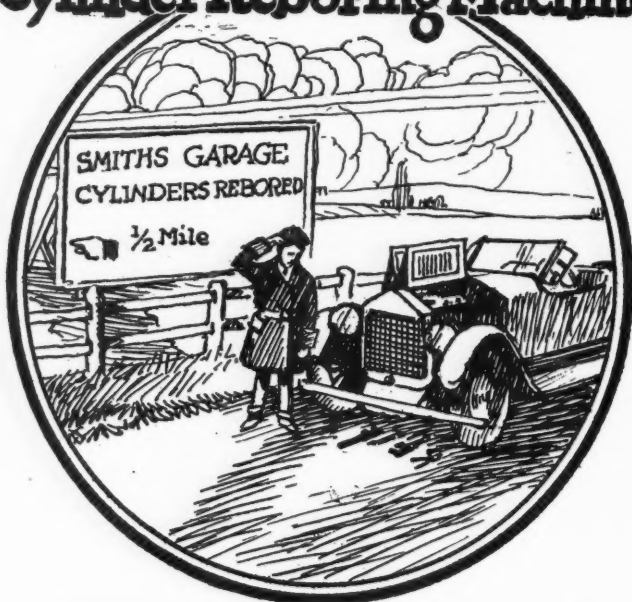
It is mounted on the right front fender and is provided with a shield extending forward which confines its rays of light to the *right* side of the road.

Jacobs Road Lite

Lights the way to safety

WAYNE

Cylinder Reboring Machine



*When he needs
a friend—*

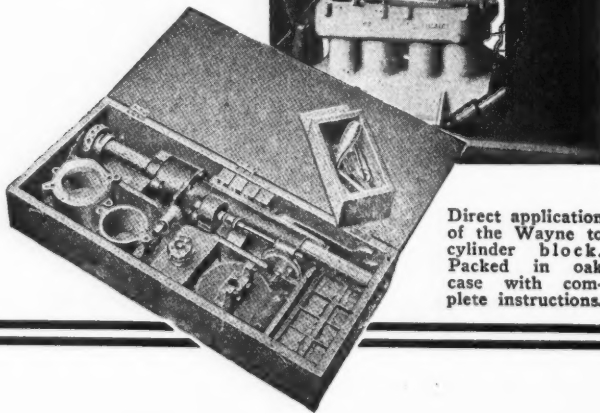
Can you recondition his cylinders in a few hours
at small cost?

When his cylinders go wrong and there is need for quick reboring—are you prepared to give him real service? If your shop is equipped with a Wayne Cylinder Reboring Machine you are. You can rebores cylinders in a few hours, in the majority of cases, without moving the blocks from the chassis. You can give dependable estimates for this work. You can assure the motorist of a smoother running motor with increased power because the Wayne rebores accurately! It can be operated by hand, small motor or electric drill

We can furnish testimonial letters from garagemen proving it is a profit maker that soon pays for its installation.

Write for full details today!

The Wayne Tool Mfg.
Co.
Waynesboro, Pa.



Direct application
of the Wayne to
cylinder block.
Packed in oak
case with com-
plete instructions.

Lift the Seat and Look!



**A
Real
Gas Gauge
for Fords
and
Chevrolets**

Besides saving the Ford owner about eight moves in finding out *just* the amount of gas in his tank, the Tasco Gauge does away with the old cap.

Chevrolet owners unwillingly shirk the job of measuring their gas because they must unscrew the cap. With the Tasco a glance tells them.

Now, when cars are used week in and week out, owners in increasing numbers will watch your window for a good gas gauge. Show them the Tasco.

At \$1.25 Ford or Chevrolet — they sell quickly and consistently — and profitably.

See your jobber about Tasco and write for the discounts.

Akron-Selle Co.
Akron, Ohio

"TASCO"
**VISIBLE
GAS GAUGE**



Handy Ben
TRADE MARK

VISIBLE
Oil Pumps
and Self
Measuring
Grease
Pumps

HANDY BEN "505"

You'll want it—when you see it.

You'll insist on its adoption after trial.

Its efficiency increases with use.

You can please your trade to a degree
never dreamed of before.

Quicker sales will cut your overhead
expense and give a better service.

First cost is the last cost.

Get the facts from your jobber
and

*Watch for Handy
Ben "505" Barrel
Oil Pump*



Bert Bennett
PRESIDENT
Bennett Injector Co.
MUSKOGEE, MICHIGAN

*Inventors and Manufacturers of Grease
and Oil-Handling Devices*

"The busiest tool in the Shop!"



That's what the "Yankee" Ratchet Breast Drill is called in service stations and repair shops. It is always in demand.

Many times a day it is needed to drill in places where other drills can't work. It does these otherwise impossible jobs—easily, quickly and efficiently.

Where there is scarcely room to move the crank to and fro, the "Yankee" DOUBLE Ratchet keeps the bit cutting continuously.

"YANKEE" Ratchet Breast Drill No. 1555

helps to put your shop on a more profitable basis. Five ratchet adjustments. Plain Drill, Left-hand Drill, Right-hand Drill, DOUBLE Ratchet and gears locked. Touch on Ratchet Shifter changes adjustment. Two speeds, controlled by lever at hub of crank, and changed without removing drill from work.

Some other "Yankee" Tools

Spiral Screw-drivers
Ratchet Chain Drills
Ratchet Bench Drills
Ratchet Tap Wrenches

*Dealers Everywhere Sell
"Yankee" Tools*

FREE Tool Book

Shows and describes
all the necessary
"Yankee" Tools for
saving time and la-
bor.

**NORTH BROS.
MFG. CO.**
Philadelphia
U. S. A.

"YANKEE" TOOLS
Make Better mechanics



Reflect

on the relation of gaskets to motor performance: a leaky gasket saps the strength of the best automobile engine in the world.

The motorist looks to you as the owner of a reliable service station for expert advice on the unseen parts of his motor.

By always putting in the best gasket, you can best serve your customers and increase your business.

Neverleak gaskets are bound with a raised copper edge that guarantees against all leakage. They give to the motor an increased power and a greater flexibility.

NEVERLEAK Gaskets
are "Bound to be Good"

NEVER-LEAK Cylinder Head Gaskets

Fitzgerald Manufacturing Company
TORRINGTON, CONN.



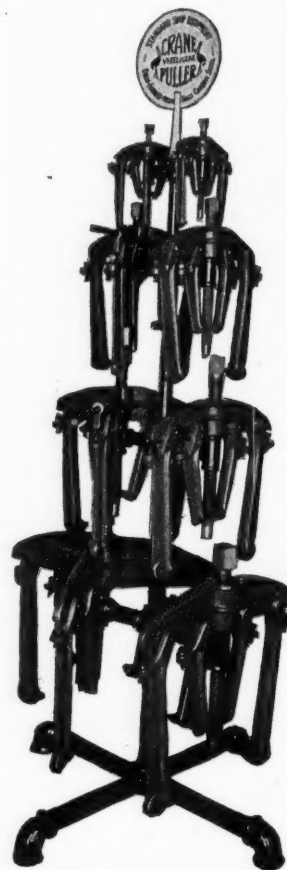
When the Jobber's Salesman Calls—

listen in—he's got \$15.00 for you.

Peck's Improved Assortment of Springs specially selected for Garage and Service Station use costs \$5.00. The use of these springs on repair jobs brings you in \$20.00—Plus. Your profit is \$15.00. Worth going after?

If that salesman doesn't get around soon you'd better write your jobber. \$15.00 profit feels good in the pocket.

The Peck Spring Co.,
PLAINVILLE, CONN.



Helps you pick the right puller

Greatest aid to picking out a Wheel or Gear Puller ever devised. On one stand, at one time, you see them ALL—and can pick the RIGHT one for your particular work. Two-arm and crowfoot pullers, four sizes of each. Look for the Crane Puller rack at your jobber's. It will PAY you.

JOBBERS: Greatest aid to wheel-puller sales ever. It is doubling and tripling sales in some places. Don't fail to get one—FREE.

**CRANE
WHEEL & GEAR
PULLER**

Crane Puller Co.
Arlington, Mass.

STUDEBAKER

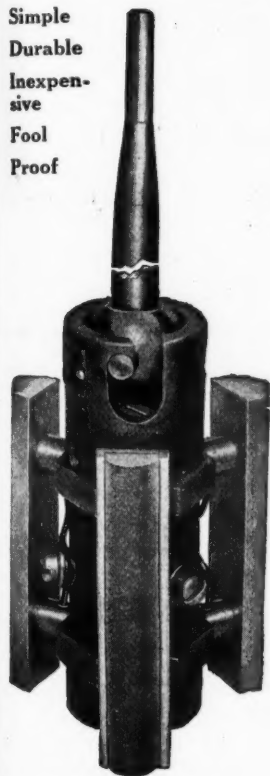
is now added to the list of
car manufacturers
who APPROVE and
RECOMMEND

HUTTO

(Positive Set)

Portable Cylinder Bore GRINDERS

Simple
Durable
Inexpensive
Fool
Proof



Patent Applied for

*A Fifteen Day
Free Trial
on Request*

AUBURN
BUICK
DODGE
DORT
DURANT
FEDERAL
GRAY
HUPP
and
OAKLAND

ASK YOUR JOBBER

what he thinks of the "Hutto." Most good jobbers
can supply you with it. The price is only

\$37.50

Remember if it is not all we claim for it, return it
and get your money.

GRINDER SALES CO.

526 W. Fort St.

Detroit, Mich.

Get a Manley

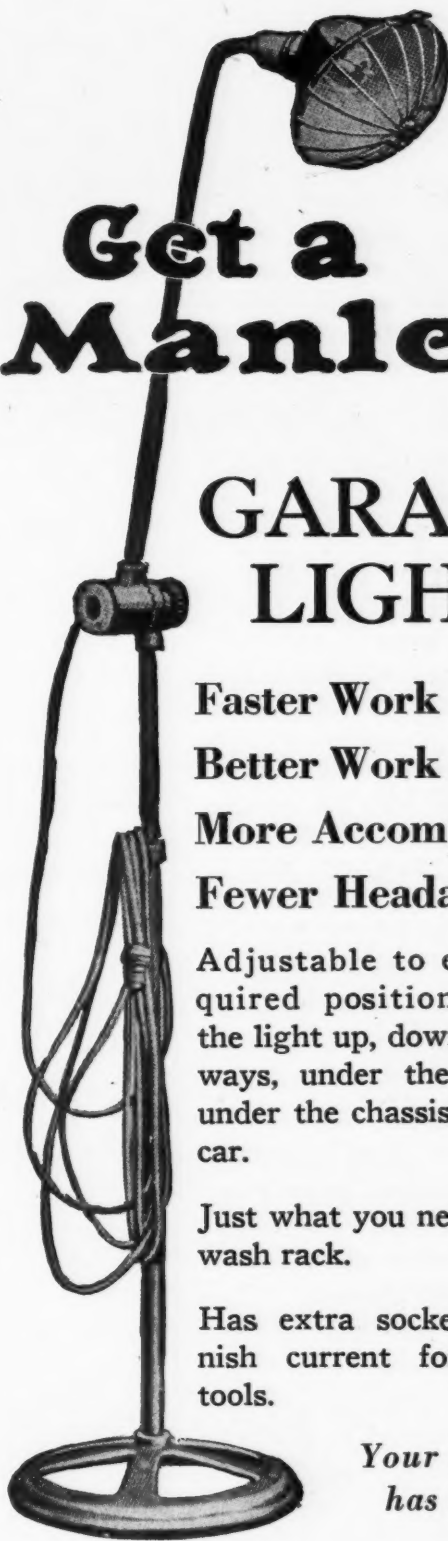
GARAGE LIGHT

Faster Work
Better Work
More Accomplished
Fewer Headaches

Adjustable to every re-
quired position—throws
the light up, down, or side-
ways, under the hood or
under the chassis or in the
car.

Just what you need for the
wash rack.

Has extra socket to fur-
nish current for electric
tools.

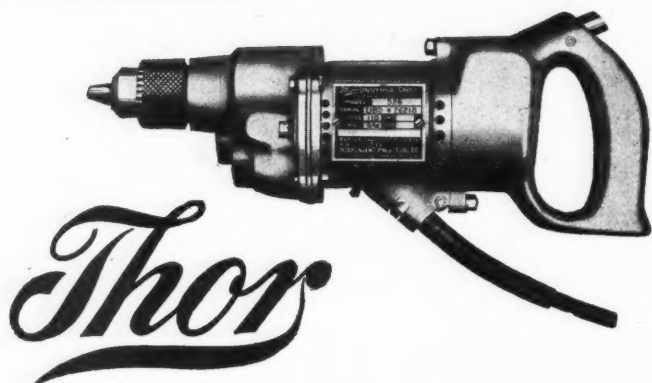


*Your jobber
has them*

*For Complete Bulletin
write to*

MANLEY MFG. CO.

York, Pa.



Quality Electric Drills

64 Sizes and Styles 0 to 2"

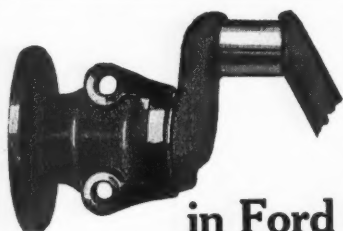
We present THOR to the particular driller. THOR Electric Drills are made in accordance with the best engineering practice. They are equipped with our own specially built universal electric motor, which is unequalled for power and endurance. Ball and roller bearings, Double silk-wound coils, Jacobs Chuck and many other highest type features.

"Not how cheap—but how good"

Buy from your Dealer, or we will ship direct.

Independent Pneumatic Tool Company
600 W. Jackson Blvd. Chicago, Ill. 1463 Broadway New York City

Branch Offices Everywhere



Easy to Stop the End-Thrust in Ford Crank-Shaft

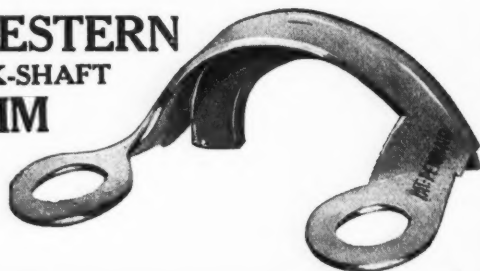
Don't throw away the end bearing cap. Don't go to all the trouble of putting on a new one, with all the necessary scraping to fit. Simply use an Oestern SHIM. The old cap will fit fine and do service equal to new one.

A full end thrust bearing, next the fly wheel made positive.

75c for one. \$8.40 per doz., list. Liberal discount to jobbers and dealers. If your jobber does not handle them send your order direct to us.

THE OESTERN CO.
DUBUQUE, IOWA

The OESTERN
CRANK-SHAFT
SHIM



HELP YOUR CUSTOMERS

TO FORGET THEIR CHAIN TROUBLES

HELP YOURSELF

TO MORE CUSTOMERS AND MORE PROFITS

By Installing Only

"WHITNEY" HIGH MILEAGE CHAINS FOR REPLACEMENTS

There are over 2,000,000 "Whitney" chains on the road today. Over 1,000,000 "Whitney" chains have been installed as original equipment on one well known make of car. Over 60,000 "Whitney" chains have been installed for replacements on the camshaft drive of one prominent motor although not used as original equipment on this car.

It is the GREATER MILEAGE that does it.

THE WHITNEY MFG. CO. HARTFORD, CONN.

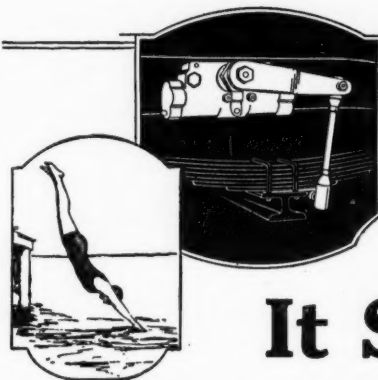
New York
L. C. Biglow & Co.,
Inc.
243 West 55th St.

Boston
George C. Stell
740 Commonwealth
Ave.

Philadelphia
R. J. Howison
624 Race St.

San Francisco
A. H. Coates Co.
615 Howard St.

Seattle
A. H. Coates Co.
1115 E. Union St.



It Sells

The 2-Way Hydraulic Shock Absorber might be the most wonderful device ever created by man.

But unless it can be sold, it would have no interest to you.

The 2-Way has been on the market four years. Sales for 1923 exceeded those of 1922 by 100%.

One family, consisting of father, sons and sons-in-law, has absorbed eight sets.

Dad recommends it to his boys. Mother insists upon having it installed.

Why not accept our franchise and not only make good clean money, but friends, who will help you in other lines?

Write today for particulars.

2WAY
HYDRAULIC
SHOCK
ABSORBERS

AUTO SPRING
CONTROL CO.
Jamestown, New York

**QUALITY
PRODUCTS**

Cadmium Test Device

Tells the exact charging and discharging condition of both Positive and Negative Plates.

Also gives exact measurements of individual cell voltage.

The positive prod is red. The negative prod is black. By placing the positive prod on positive pole of cell; negative prod on negative pole of cell; then allow the cadmium, or center prod to project into the electrolyte thru vent in cover of cell; a perfect reading is obtained.



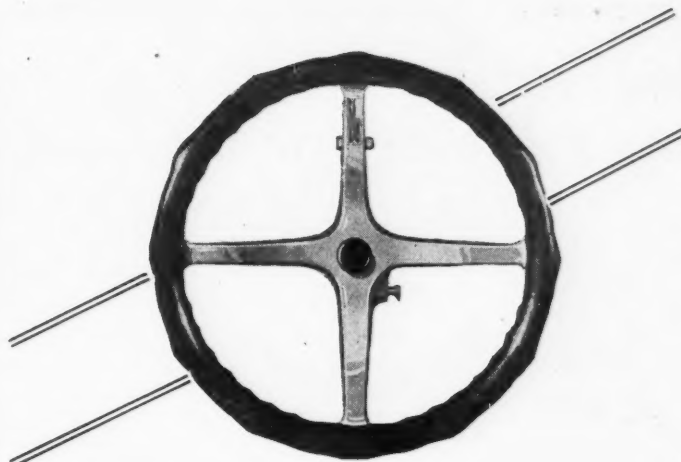
The switch on handle is turned to left or right for negative and positive reading.

No wires to bother with or tangle.

List\$17.50

**Quality Electrical Products
Co.**

1921 McGee Traffic Way
KANSAS CITY, MO.



New!

A specially designed Lock Wheel that requires no key—except for unlocking.

Simply turn point of lock trigger over keyhole—pull outward—and car is secure.

It tilts so easily that the driver unconsciously uses its convenience when leaving car.

Safe—secure—practical—positive. Very simply installed in ten minutes.

Send at once for Sample Wheel. Examine it. Test it. Convince yourself of the easy profits to be made. It's a big seller in a big field.

Toledo Mfg. Co.

Factories Building

Toledo, Ohio

THE TOLEDO WHEEL



Vitek patents allowed

AUTOMATIC TIGHTENING DEVICE

Double band
Rust proof

Low price
Made exclusively by

Quick opening
and adjusting

VITEK MANUFACTURING COMPANY

INDUSTRIAL BLDG.

Chicago Distributor

Geo. E. Peterson, 1st Natl. Bk. Bldg., Chicago

OMAHA, NEBR.

NOTICE TO DEALERS: Insist that your jobber furnish you with Duplex Automatic hose clamps. They are the best your money can buy. If he cannot supply them, write us for samples and prices.



Better than a "Best Seller"

THIS dust-proof—vibration-proof—accurate little dash clock has already established a sales record.

Its success as a "leader" has been phenomenal from the start.

Minute Meter fits flush on any dash—wood or steel of any thickness.

Regulate it without dismantling the dash. Turn a knob and Minute Meter is removed from the dash.

Setting and winding as simple as caring for your watch. A remarkable addition to the motorist's needs.

Get a counter display from your jobber or write direct.

Our Radium Dial Model Minute Meter costs only \$1.00 more.

At \$3.50 it sells as fast as our Plain Dial. Both clocks

identically the same except for dial. Both are better than "Best

Sellers." Canadian

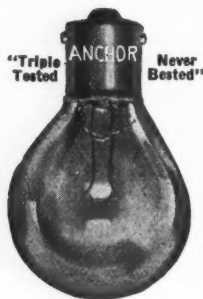
prices: Plain model,

\$3.50. Radium Dial,

\$4.50.

The LUX CLOCK MANUFACTURING CO., INC.
Waterbury - Connecticut - U.S.A.

Did You Ever Study a Dreadnaught's Anchor?



Such a study would make self-evident to you the reasons why nothing can take the place of an anchor for the work it is asked to do.

You would come away convinced of the anchor's:

- 1—**Indispensability**—The ship couldn't keep out of trouble without one.
- 2—**Indestructibility**—More durable than the dreadnaught itself.
- 3—**Uniformity**—the unvarying quality of the steel in it.
- 4—**Symmetry**—The beauty, economy and utility of its curves.
- 5—**Efficiency**—Capacity to do its work better than anything yet conceived.

It was not mere chance that made America's foremost independent automobile lamp manufacturers call their product the Anchor Auto Bulb.

The Anchor Ideal—**Indispensability, Indestructibility, Uniformity, Symmetry and Efficiency**—was etched in the original design.

Eight years of constant improvement have made the Anchor Bulb as durable, as beautiful and as reliable as the ship's talon after which it was named.

Anchor Auto Bulbs

"TRIPLE TESTED—NEVER BESTED"

Anchor Electric Co., 555 W. Jackson Blvd.
CHICAGO

Originators of "Same Day Service" in the Auto Bulb Industry

Service Rim Tool

5 minutes to any job



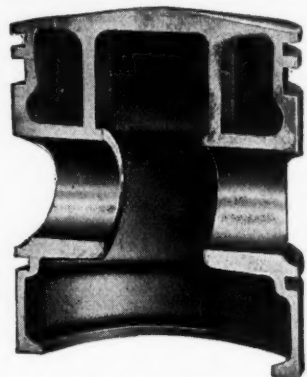
A 100% Perfect Tire Changing Tool Sold with a Money Back Guarantee

ADJUSTABLE, case-hardened, corrugated grips clamped on rim by wing nut, which absolutely cannot slip, bend, kink or harm the rim. ABSOLUTE ASSURANCE of being able to handle any rim, even the worst battered and bent ones.

ADJUSTABLE to all makes and sizes of demountable split rims. SIMPLICITY of operation coupled with strength and lasting durability. Send for your service rim tool. It is waiting.

Service Mfg.
Co., Elkhart,
Indiana.

Aluminite Pistons



Wear five times longer than die-cast pistons. They will *not* score, pump oil or slap. These Ribs carry heat away and prevent preignition. In use in 90 per cent of the successful racing motors. Weigh only one-third that of cast iron. Make a good four perform like a six. The result of nine years of successful operation. Used by winner of Pikes Peak Race. A combination of *right alloy and right design*. The one great replacement for all makes of cars. We also make Aluminite connecting rods. *Special prices*.



High Speed Camshafts

Replacement for all makes of cars. Permit higher speeds and give any motor more power. Tests prove this. A *quality* replacement at a low price. Replacement list, prices and discounts sent on request.

GREEN

ENGINEERING CO.
DAYTON, OHIO



More metal polish sales than ever before

THERE is far more metal polish being sold now than in the days of brass radiators. Nickered surfaces are the style on sport models and everywhere.

SKAT METAL POLISH

is something new, *different*, and better. No matter how many kinds you sell or have tried, *try this one*. It will surprise you—*just try it*.

Write for samples, prices
and special proposition.

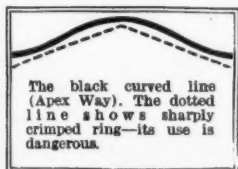
THE SKAT CO. Hartford, Conn.

Contact Points Must be Rounded



Apex Innerings with rounded points of contact, with the inside of the ring and the reverse curves, contacting with the ring groove, make them extremely flexible. When compressed to enter the cylinder they automatically adjust themselves to conform to the space between the ring and piston. Apex Innerings therefore cannot cause too much wall pressure, as is the case with sharply crimped rings, which are too rigid; cause trouble and may break because of the sharp crimping process.

The "round — flexible points" directly give the results you want and that feature is patented by the manufacturer of "Apex".



The black curved line (Apex Way). The dotted line shows sharply crimped ring—its use is dangerous.

Apex Innerings STOP Oil Pumping Piston Slap without reboring

The Apex Method is the most economical—yet it does the work—quickly, satisfactorily. A small investment for Genuine Innerings and labor puts the motor in good shape.

Retail price 20c each up to $\frac{3}{8}$ " wide or 5" diam. Larger 35c. Genuine Apex Innerings are made to size for immediate installation. Look for the GUARANTEE TAG. REFUSE ALL SUBSTITUTES. Remember Apex are guaranteed to give results.

THOMSON MFG. CO.
Peoria, Dept. C. Ill.

LITTLE GIANT Roller Bearings

for Replacement

From Your Jobber Only

To provide dealers with better, quicker service on replacement bearings and to provide for a greater convenience of financial arrangements—we are distributing Little Giant Roller Bearings exclusively thru the jobbing trade.

To get jobber distribution and make this service profitable for jobbers to handle, we have eliminated the factory distributor—in order to give the jobber the whole discount and to eliminate

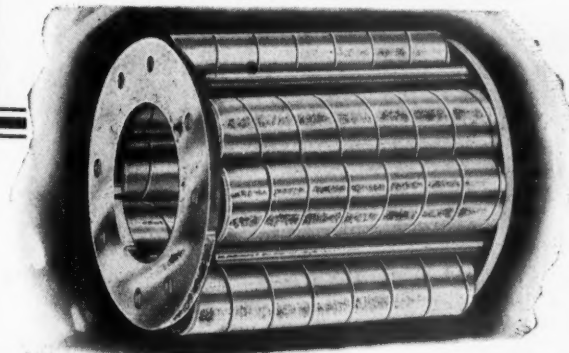
unfair factory competition. To assure prompt deliveries, direct from the factory, without compelling jobbers to stock heavily to keep their stocks complete, we have enlarged our Factory Facilities and can deliver to jobbers on day order is received.

Little Giants are strictly quality Roller Bearings. Made of the finest bearing materials, with extra heavy ribs, built to exact sizes—they are perfect replacement bearings.

Dealers—Order from your Jobber.
Jobbers—Write for details.

ROLLER BEARING CO. OF AMERICA
Fretlinghuysen Ave. & Hunter St., Newark, N. J.

We Make Bearings for Everything that Rolls



Replacement Bearing Parts for Ford, Chevrolet and Maxwell from Stock



Bosch The Long Life Spark Plug

Famous for the fat, white hot spark. Millions in use the world over.

Every live dealer should at once become posted on Bosch Spark Plugs, Horns, Magnetos and Associated Products.

Robert Bosch Magneto Co., Inc.

OTTO HEINS, President

109 West 64th Street

New York

Chicago Branch: 1302 South Wabash Ave.

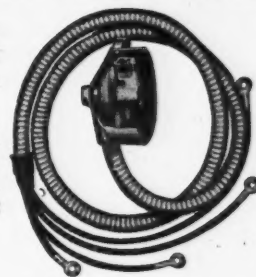
Service Stations in Principal Cities the World Over

The Genuine, Original Bosch means Robert Bosch only.

TURNER 2 in 1 TIMER FOR FORD MOTORS

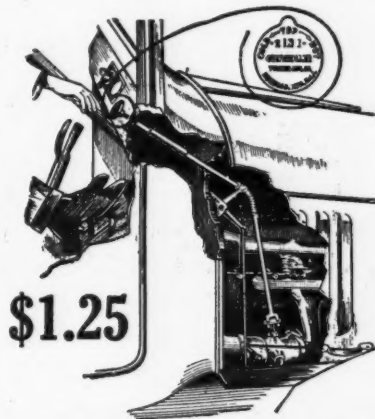
The real quality timer for Fords. Built on a different and better principle of Ford ignition, and proven by tests over a period of seven years.

The Turner 2 in 1 Timer sells fast and stays sold. It brings the dealer a fair margin of profit and builds good will for him among his most exacting customers. List price \$3.75.



TURNER 2 in 1 Carburetor Control

Gives complete control of Ford carburetor from seat. One large, handsome dash button (in place of regular Ford button) both chokes and adjusts. Save gas, makes starting easy, prevents frequent "killing" of motor and saves battery. Easily and quickly installed. One model fits all Fords. Price \$1.25.



\$1.25

TURNER MANUFACTURING CO.

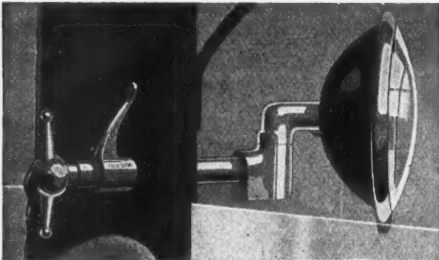
DEPT. K

KOKOMO, INDIANA

Sells Whenever You Show It

Because it is a handsome piece of equipment—because the control is conveniently located—because the spotlight is always in place ready for use whether the windshield is open or closed. Made for open and closed cars.

PFAFF SPOTLIGHT *Inner Control*



PRICE \$10

Will sell wherever there are car owners. Anyone can install it by drilling a 3/8" hole in the corner post.

Send for circulars and discounts.

PFAFF MFG. CO.
6340 Stewart Ave.,
Chicago

New Departure Ball Bearings



PAROB EXPANSION HAND REAMER

BLADES CUT AT
DIFFERENT ANGLES

Each successive blade cuts AT A DIFFERENT ANGLE from the one before it.

No CHATTER, no DIGGING IN—even in keyed holes.

TWICE the expansion of others. All sizes. Money-back guarantee.

Ask about the GAMMONS TAPER PIN REAMER—Wonderful Time-saver.

THE GAMMONS-HOLMAN CO.

Dept. C.

Manchester, Conn.

JOHNSON No. 8 Adjustable Torch

Is inexpensive but a necessity for every shop. This Torch is fitted with one Powerful Johnson Gas Burner, which will quickly melt 20-25 lbs. of soft metal. The pot can be instantly removed and used for heating soldering coppers, long rods, or Burner can be removed and used as an efficient hand torch.

Write today for descriptive literature of Johnson Appliances.

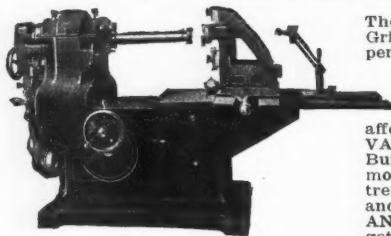
JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Pacific Coast Representative, C. B. Babcock Co., San Francisco, Calif.
New York Office: 277 La Fayette St.



No. 8
Adj. Torch

LANDIS



The LANDIS Cylinder Grinding Machine is the perfected product of the world's largest exclusive grinder builders. Because of our volume we can afford to give you MORE VALUE for your money. Built expressly for automotive repair shops. Extremely simple in design and operation. Don't buy ANY machine without first getting a LANDIS quotation. Catalog.

Landis Tool Co., Waynesboro, Pa.

New York Office—30 Church St.

WHEN ALL advertisers demand their money's worth, all publications will provide circulation reports verified by the Audit Bureau of Circulations.

It is one of the mysteries of the advertising world that while all manufacturers demand verification of weight and quality in the material purchased, some of them still buy advertising space without knowing what they are paying for.

Such advertisers, however, are now exceptional. Most of them demand verified A. B. C. circulation statements before placing contracts.

In the case of MOTOR AGE, the demand is immediately met.

It is a member of the Audit Bureau of Circulations.

BLACK & DECKER QUARTER INCH DRILL

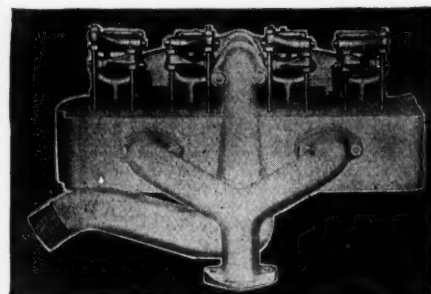


\$28.00

"With the Pistol Grip and Trigger Switch"

THE BLACK & DECKER MFG. CO.
Towson, Md.

ROOF 16 OVERHEAD VALVE EQUIPMENT For Ford and Dodge Motors ROOF 8 VALVE HEAD FOR FORD MOTOR



Stupendous Power—
Lightning Speed

Ford racing cars with Roof Equipment are rivals on mile and one half mile tracks of the highest priced racing cars. Doubles the pulling power of the Ford or Dodge pleasure car or truck. Hill climbing and general road work beyond wildest dreams of the owner. Complete—ready for installation—no machine work necessary. We are headquarters for all speed equipment. No matter what you want, write us. Racing quality—lowest prices. A postal card brings you complete list of our specialties.

Jobbers—Dealers—Consumers—Write Us
THE LAUREL MOTORS CORPORATION, ANDERSON, INDIANA

FOLLETT'S NEW MODEL TIME STAMP

—accounts for every labor minute



Prints the year, month, day, hour, minute, A. M. or P. M. at the exact moment the plunger is pressed—like this, for example:

NOV 19 1920 4 31 PM

Tells when a job is started—and when it is finished. There can be no dispute over the time charge.

Absolutely automatic — except for winding. Special machines, with as many as six different words, can be made. Every machine guaranteed.

Learn the interesting details from our descriptive data.

Follett Time Recording Co., 7 West Broadway, New York City
"Established since 1904"

PROFITS!

NO GRINDING

MORE POWER

LESS GAS

SILENT

BOYLE NEVER-GRIND SILENT VALVE

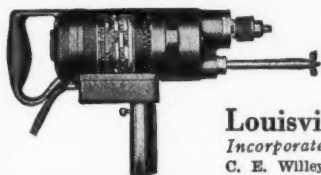
Here is a guaranteed valve that brings profit to the dealer and complete satisfaction to the owner. Write for full particulars.

BOYLE VALVE CO.

2101 Larrabee St.
Chicago

Get This "Pioneer" \$65 Garage Special

Electric Drill
and Valve Grinder



Greatest time and money saver, as well as money maker, for your shop—

"It Will Do The Work"

Louisville Electric Mfg. Co.
Incorporated Louisville, Ky., U. S. A.
C. E. Willey, Pres. J. B. McFerran, Secy.-Treas.

Every Ford Owner Needs This Wrench In His Tool Kit

When spark plugs are rusted in, it takes a good wrench to remove them. We will guarantee our 3620 to do this trick.



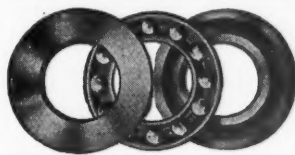
The 3620 can be used on cylinder head bolts and will get the two under the dash. You can use it on water connections and other parts.

Show this number 3620 to every Ford owner, it will make sales, show you a good profit and be a fast seller.

WALDEN-WORCESTER
Incorporated
WORCESTER, MASSACHUSETTS



STAR BALL RETAINERS



For Thrust and Cup and Cone Bearings

THE BEARINGS COMPANY OF AMERICA
LANCASTER, PENNA.

Detroit Office,
1012 Ford Bldg.

USE A STORM HONE

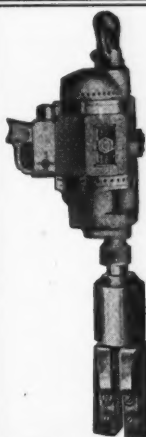
It handles an important part of your cylinder work. Takes all sizes of cylinders from 2 3/4 to 8". The deep, heavy, wide faced stones on the Storm Hone mean longer life, faster cutting and smoother finishing as well as freedom from chatter and stone breakage. Complete and with extra equipment only \$40.25.

Write for the Storm Book, "Modern Cylinder Methods"

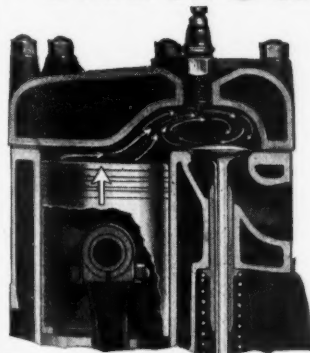
STORM Mfg. Co.

406 A Sixth Ave. So.
Minneapolis

Minn.



The Ricardo Head



produces higher speeds and obtains economies so great that it compels broad recognition as a distinct development in the history of internal combustion engines.

All Waukesha Motors are now equipped with the Ricardo Head.

WAUKESHA

Motor Company

ENGINE BUILDERS

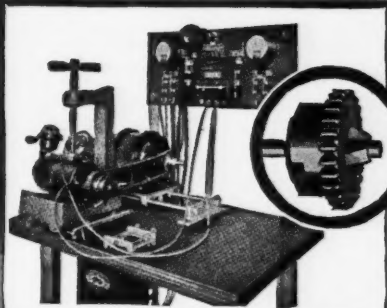
Waukesha, Wisconsin

New York

Detroit

EXCELSIOR TEST BENCH

With the Positive Drive and Speed Control



INCREASE YOUR PROFITS!

Starting, lighting and ignition pays bigger profits than any other branch of automotive service.

The Excelsior Test Bench

equips your shop complete for this work.

Price \$385.00

Payable \$50 per month

Write for bulletin 975M

WEIDENHOFF

4350 ROOSEVELT ROAD
CHICAGO, ILL., U. S. A.



FOLBERTH
Automatic
WINDSHIELD CLEANER

Pat. "It Cleans While You Drive"

A good profit for you in this wonderful, fast-selling necessity. Ask your jobber or write.

THE FOLBERTH AUTO SPECIALTY CO., CLEVELAND



METROPOLITAN MODEL—NICKELED
FEDERAL BUMPERS

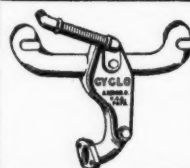
Strong bumpers—without clumsiness. They add to the lines and beauty of the motor car. Ask for Catalog 11.

FEDERAL PRESSED STEEL CO., Milwaukee, Wis.
Jobbing Division, London Guarantee & Accident Bldg., Chicago

Meachem Gear Rings for Fly Wheels

Quality rings at lowest prices. Get our list.

MEACHEM GEAR CORPORATION
Syracuse, N. Y.



Cyclo "Dynamic" Hot-Spot for Fords

This "Modified Vapor" manifold gives a gas with lots of "kick" in it for hill-climbing — exceptionally smooth running and economical at all seasons. Vacuum control varies the heating inversely with the load.

The best permanent proposition for dealers.

CYCLO MANIFOLD CO.

High & Chestnut, Akron, Ohio

RAMCO *Cushion* INNER RINGS

fit behind piston rings and keep them in perfect contact with the cylinder walls at any motor speed or temperature.

RAMSEY ACCESSORIES MFG. CORP., ST. LOUIS, MO.



ARROW HEAD

Dependable

PRODUCTS

Pistons, Piston Pins,
Axle and Drive Shafts

Arrow Head Steel Products Co.
Minneapolis, Minn.

VESTA STORAGE BATTERY

We can prove to any automobile dealer that there's money in selling Vesta Batteries and there's no "grief." We say we can prove it. Ask us to do it.

Vesta Battery Corporation Chicago, Ill., U. S. A.

Write ~ and find out how

WATSON STABILATORS

Change the Whole Nature of Your Car

JOHN WARREN WATSON CO., 24th & Locust Sts., PHILADELPHIA



Welco Accelerator

Quickly installed on Fords

Works independent of throttle. Adjusting nut sets idling speed. Complete with heel rest, screws and adjusting nut, in attractive carton. Ask your Jobber.

Welco Products include Step Plates, Blanket Holders, Gas Tank Caps.

The Welker-Hoops Mfg. Co., Middletown, Conn.

3,000 Dealers Make Bigger Profits



It will pay you to investigate

**GUARANTEED
18 MONTHS**

COLE BATTERY SALES CORP. 2435-39 Indiana Ave.
CHICAGO, ILL.

EATON BUMPERS

Pulls Car Over Rough Spots



No friction—no springs—no oiling. For Fords—solid Drop Forging—\$24.00.

YORK ELECTRIC & MACHINE CO.
York, Pa.



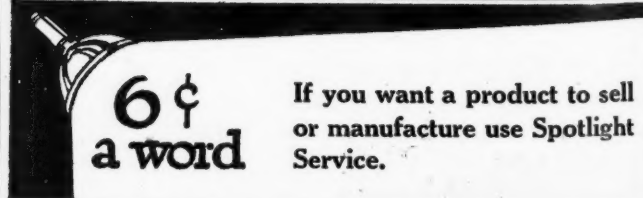
KING QUALITY

ALL THE NAME IMPLIES

STEERING KNUCKLE BOLTS AND BUSHINGS
PISTON PINS, PISTON PIN SET SCREWS

Automotive Division

KING SEWING MACHINE CO.
BUFFALO, N. Y. BRIDGEBURG, ONT., CAN.



**6¢
a word**

If you want a product to sell or manufacture use Spotlight Service.

BATTERY SERVICE EQUIPMENT!

UNITRON Rectifier | PORTOSTAT Test Set

FOREST ELECTRIC COMPANY
New and Wilsey Streets NEWARK, N. J.



Heat shaped to insure perfect roundness, sold at almost the price of a snap ring.
Wilkens Mfg. Company
15th and Mt. Vernon St., Philadelphia, Pa.

POWERFUL — SAFE — FAST! "DICKERSON" TURNTABLE JACK

Handles all cars for all kinds of work. Great for spring and chassis repairs. Saves time—makes money for you. Priced RIGHT. Write for catalog.

C. A. DICKERSON
COMPRESSOR CORP.
Buffalo, N. Y.



IT'S EASY TO SELL

"The only oil ring with a mileage guarantee"

"Sav-Oil" is stamped on bottom of every ring

The Sav-Oil Ring Mfg. Co.

1037 S. Figueroa St., Los Angeles



Flatlite

A reflector—not a lens. Greatest dealer opportunity ever offered. Sold either as complete headlamp or simply as a reflector to be inserted in lamps now in use. Write.

THE AMERICAN FLATLITE CO., Cincinnati, Ohio

Helmet Products

Stock the real quality line of signal lamps, parking lights, etc. Our fixtures are distinctly different. All made of rugged DURALIUM castings—beautiful, practical, made to last. Our Ad-Lite is a big feature. Write for details today.

WILLIAMSON-BEACH CO., 882 Park Ave., Baltimore, Md.

THE QUINCY SILENT AIR-MASTER

The Most Air Per Dollar Cost

WALL PUMP & COMPRESSOR CO.

Quincy, Ill., U. S. A.

GATES VULCO

Fan Belts and Radiator Hose

Made By

The World's Largest Makers of Fan Belts

Threaded for 1/2-in. hose. Strongly supported and counter balanced. All brass construction.

Electric contact by rotor brush. Watertight joints—automatic water control at end of hose.



GAYLORD IDEAL Overhead Washer

9 ft. swing permits use of short hose. Light always OVER job. Water controlled AUTOMATICALLY by LITTLE GIANT WATER SAVER. Lowest priced combination washer and water saver. Write: THE GAYLORD MFG. CO., Paterson, N. J.

WEAVER
GARAGE
AND SHOP
EQUIPMENT

WEAVER

GARAGE AND SHOP EQUIPMENT

WEAVER
MANUFACTURING
COMPANY
SPRINGFIELD
ILLINOIS
U.S.A.
Send for Catalog

Greatest Load Capacity for size makes Gurney Ball Bearings best for Replacement Work.
Let our Engineers assist you.
MARLIN-ROCKWELL CORP.
Successors to Gurney Ball Bearing Co. Jamestown, N. Y.

GURNEY

Dealers
Every
Where

INSIST UPON



The Original

SILENT TIMING GEARS

MADE OF

CELORON

Dalton & Balch, Inc.

2333 Michigan Ave., Chicago

Over a
Million
In Use

ALMOND

"STRAIGHT LINE" PRODUCTS

| | |
|----------------------------|--------------------------|
| Geared Drill Chucks | Right Angle Transmission |
| Standard Drill Chucks | Flexible Steel Tubing |
| Independent Lathe Chucks | Flexible Arms |
| Geared Scroll Lathe Chucks | Micrometers |
| Combination Lathe Chucks | Fine Mechanical Tools |

Illustrated Descriptive Bulletins Mailed Upon Request.

T. R. Almond Mfg. Co., Ashburnham, Mass., U. S. A.

LA ROSE AIR STABILIZER

A device which makes "Damp Evenings" all the time. It moistens the air, also clears it before entering the carburetor. Simple, efficient, no moving parts, an air cleaner, easy to install, increases mileage, eliminates carbon, lasts a lifetime. Write for particulars, prices and discounts.

Lasco Corporation, Niagara Falls, N. Y.

ZENITH

CARBURETOR

More
Power
Less
Fuel

Zenith - Detroit Corporation, Detroit, Mich.

"The Best-Equipped Shop
Gets the Business"



Stevens **SPEED UP** Tools

OVER 100 ACCURATE SHORT-CUTS
TO GOOD WILL AND PROFIT ~ ~
Thru your jobber - his service is economy

STEVENS & COMPANY
375 BROADWAY - NEW YORK



**8 Hour Battery Charging
PAYS
BIG!**
Small Cash Payment Easy Terms

INCREASE YOUR PROFITS!

HB 8-Hour Constant Potential Battery Charging doubles your present income. Lowers charging cost, saves one-half on labor, one-half on rental batteries needed. Patented HB Voltage Regulating Winding eliminates reversing. \$20 monthly pays for outfit. 30 days' free trial. Write for information.

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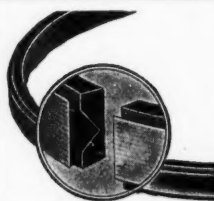


KISSEL
The Custom Built Car

The Aristocrats of Motordom

7 Models—Open and Closed
Distributors in principal cities. Open territory now being closed.

Kissel Motor Car Co.
Hartford, Wis.



HOESS

The Humanized Ring

Combines the simplicity of the one-piece ring with the snug fit and oil-scraping ability of more complicated designs. Good profit and fine results. Write for prices and discounts.

HOESS BROTHERS

State & Jessie

Hammond, Ind.

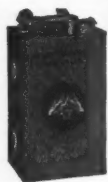
REMINGTON AUXILIARY

GASOLINE RESERVE FOR FORDS

Ask Your Jobber or Write Us.

REMINGTON AUTOMOTIVE CORPORATION
17 West 60th St. New York, N. Y.

*The Man
Who Owns
It Never
Runs Out
of Gas*



Real High Tension Ignition for Ford Cars

Varley Transformers eliminate nearly all chronic ignition trouble. Save gas. Add power. Keep plugs clean. Stop misfiring. Save repairs. \$2.50 each. Write for full particulars.

The Autocoil Co., Jersey City, N. J.

All in the Metal

G-H TENSION RINGS



G-H Tension Rings of the finest steel, properly tempered, not only make but keep old motors running like new—Stop piston slap and oil pumping. Real TENSION Rings—not just inner rings.

G-H Tension Ring Co., Inc.
Howard St. and Armory Pl.,
Baltimore, Md.



Kellogg

BRAKE LININGS and CLUTCH FACINGS

Always used where safety and service are the first and only consideration.

KELSO M'FG CO.,

TRENTON, N. J.

"It pays to buy a Kellogg"

KELLOGG COMPRESSORS

ROCHESTER, NEW YORK

Let us send you our FREE Catalogue on

Huetter's Fly-Wheel Gear Bands

Huetter Machine & Tool Co.

546 Kentucky Ave.

Indianapolis, Ind.

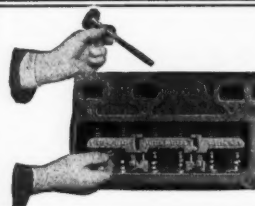


DOUBLE YOUR FORD SELLING FIELD
And Make Two Profits with

Warford

AUXILIARY TRANSMISSION
Two-Ton Capacity—High Speed

Ask your nearest distributor to demonstrate it or write us.
THE WARFORD CORP., 44 Whitehall Street, New York



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Multiple Valve Lifter
LIFTS 8 TO 12 VALVE SPRINGS
IN LESS THAN 30 SECONDS

Manufactured by
SPEED-O MULTIPLE VALVE LIFTER CORP.
1926 Broadway, New York



CASE MOTOR CARS

J. I. CASE T. M. COMPANY
Racine Wisconsin



EVERYDAY PISTON RINGS

Interlocking joint eliminates all filing, fitting and joint leakage.

Priced to be profitable to dealer and jobber.
ROYAL PISTON RING CO., INC., BATH, N. Y.

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A high grade step cut at a low price; lathe turned individually gauged.



\$700 Profit in One Month

That's what one distributor made. He's only one of many doing a big business. Dealers, too, are making sales by the dozens. Few accessories in recent years have been as popular as the

DUPLEX

Second Spare Tire Carrier & Rim Tool
Carries spare tire—also expands and contracts rim when changing tires. Two tools for the price of one. Write for details.

TRIPP-SECORD & CO.
606 Kerr Bldg., Detroit, Mich.



Thirty-seven
BRANCHES

AHLBERG BEARING COMPANY
321 EAST TWENTY NINTH STREET, CHICAGO ILLINOIS

TAKE THE END-PLAY OUT!

—WITHOUT PULLING THE MOTOR

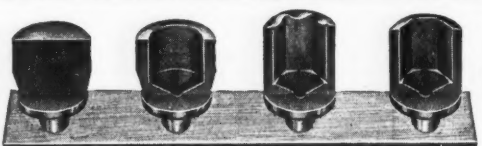


THE C. A. ADJUSTABLE CENTER BEARING CAP corrects Ford crankshaft end play and sets magneto for highest efficiency without removing the motor. Easily and quickly installed. Guaranteed for one year. List price \$3.75. Ask your jobber or dealer or write us direct.

Pat'd 7-22-'22

ADJUSTABLE BEARING CO., Inc.
Dept. M. Brazil, Indiana

CHICAGO SOLDIER CO. CHICAGO, ILL.



Cold-Drawn Sockets

ALLEN Wrench Sels

ALLEN PROCESS MAKING A SOCKET

The Allen Manufacturing Company, Hartford, Conn.

REG. U.S. PAT. OFF.

TESTBESTOS

Automobile Brake Lining

Manufactured by

AMERICAN ASBESTOS COMPANY

Norristown, Pa., U. S. A.



TYSON


Radiator Cover

Fits Core only. Best weather-proof materials. Ford size \$3. Average all other cars, \$4. Write for discounts.

Stay-Tite Tire Cover

With handy hook. Hooks easily. Can't loosen. Top material of enamel drill. As shown and Drum Type.

TYSON MFG. CO., Lock Haven, Pa.



140 Combinations

—all in this ONE set

Everything you need, in one small box, compact, accessible, and a real mechanic's outfit. Sockets will not break. Fully guaranteed. Ask your dealer or write us.

The Eastern Machine Screw Corp.
10-20 Barclay Street, New Haven, Conn.

\$17.50 COLONIAL CYLINDER HONES \$17.50

PRICES REDUCED ONE HALF

You can now buy the Colonial Cylinder Hone, an approved tool for this class of work and one of the best Hones on the market at \$17.50 each F. O. B. Kalamazoo. Made in three sizes, one, two and three, No. 1 2 3/4" to 3 3/4", No. 2 3 3/4" to 3 3/4" bore, No. 3 3 3/4" to 4 1/4".

Colonial Cylinder Hones are now being used by some of the best factory Service Stations in the country as well as by numerous Service Station Owners.

Colonial Gear & Manufacturing Co., Kalamazoo, Mich.


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Plastic Metallic Packing

Patented

Stops the leaks in automobile water pumps. Mold it with your fingers. Makes a smooth metal bearing—adjustable and practically frictionless. At your Jobbers—Get it today. It does the trick. Put up in 1 lb. cans. If your Jobber doesn't carry it, write us direct. Price \$1.65 per pound, f. o. b. Conneaut, Ohio.

The Conneaut Packing Company Conneaut, Ohio



\$5

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Water Circulating Pump

For Ford Cars and Trucks

Is as reliable as the Ford Car itself and assures a positive cooling system that constantly functions. No more overheating—No more freezing in travel—Made engineeringly correct of best materials—quickly and easily installed. Write for Dealer Discounts and complete information.

WOOD-IMES MFG. CO., MINNEAPOLIS, MINN.
Formerly Mid-West Mfg. Co.

"Guards Your Battery's Health"

"2-Point-Test"

HYDROMETER

Here at last is a battery tester of very finest quality. It is absolutely guaranteed to be accurate—every instrument must pass the two-point test. Green ribs of celluloid make sticking of float impossible. Write for details.

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High in Quality—Low in Price

Get Our Plan




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The "WHITE" Valve Grinder—\$2.00 Retail

Repairmen say it does finest work. Has no complicated parts, delivers power exactly over the center and can be controlled perfectly. Reaches valves ordinarily inaccessible. Liberal discount. Ask your jobber.


American Motor Products Corp., South Bend, Ind.

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The remarkable showing of the Fronty-Ford in the 500-Mile Race at Indianapolis May 30 was due solely to the performance of the Frontenac Cylinder Head. This Head is adapted for use on your Ford car by its designer and builder, Arthur Chevrolet. Write for FREE Catalog. Book, "How to Build a Fronty-Ford," \$2.00; free with orders of \$50.00 or more.

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Cylinder Re-Conditioning Tool

Regrinds and refinishes cylinder bores. It is self-adjusting, self-aligning and self-centering. Write for Bulletin.

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LINENDOLL EXHAUST HEATER

Attractive in appearance, with cleaning features of removable heating coil with no connecting joints inside the heater pan to leak. Meets instant approval. No odor or noise. Easily installed and operated. Will boost your winter sales—get our attractive trade proposition.

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Norwalk, Ohio

Motorex EQUIPMENT To Help you Sell Motorex

WRITE FOR INFORMATION ABOUT THE SALESMAN'S WORK BOOK

SALES EQUIPMENT COMPANY
5901-B Woodward Avenue Detroit Michigan



"In Stock—Not Over a Day Away"

Write Milwaukee Die Casting Co., Milwaukee, Wis., for name of one of our 500 distributors nearest you.

MILWAUKEE BEARINGS



TOLEDO Standardized VALVES

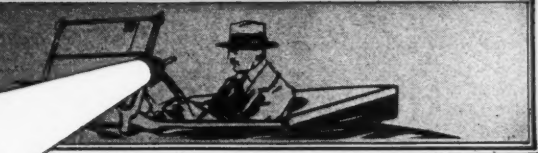
Valves Exclusively for over 9 Years

THE TOLEDO STEEL PRODUCTS COMPANY • TOLEDO • OHIO

The SPOTLIGHT

DEPARTMENT

WILL FIND WHAT YOU WANT



PARTS and REPAIRS

WRITE US FIRST!

Save Time and Money

We carry a complete line of Automobile Parts

Transmissions (all kinds)

Cylinder Blocks

Magneto (all kinds)

Drive Shafts

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New Gears (all kinds)

Starters

Used Gears (all kinds)

Rear Ends

400 Motors of all kinds in stock at all times

WRITE

BENNETT BROS.

Largest Auto Wreckers in the Country

Grant and Water Sts.

Pittsburgh, Pa.

Mail Orders Given Prompt Attention

INFORMATION

Six cents a word is the rate for all undisplayed advertisements set solid, regular want ad style; all capitals, 9c. a word; all capitals leaded, 12c. a word; minimum charge \$1 an insertion; payable in advance (see next paragraph).

Ten per cent discount if one payment is made in advance for four or more consecutive insertions. Advertisements other than "Positions Wanted" will be billed monthly if run more than four times.

Add five words for address if replies are to come to a box number address at any of our offices. These replies are forwarded each day as received, in new envelopes, at no extra charge.

Refund will be made if all insertions ordered are not needed, the amount refunded being the difference between cost of insertions given and full amount paid.

Telephone orders must be confirmed in writing same day. No allowances can be made for errors of any kind unless prompt notification is sent us.

When replying to blind ads be careful to put on your envelope the correct box number and do not enclose original letters of recommendation—send copies.

Displayed advertisements are sold by the inch. Rates will be furnished upon application.

The right is reserved to refuse any advertisement and also to rewrite and edit copy furnished whenever the publishers consider it advisable to do this.

SPOTLIGHT DEPARTMENT
THE CLASS JOURNAL COMPANY
239 W. 39th St., New York
5 S. Wabash Ave., Chicago

MISCELLANEOUS

IMPORTED ACCESSORIES

Mileage Recorders for Fords and Trucks.

8-Day Clocks for Motor Cars.

Miniature Automobiles.

J. A. WURTHNER & CO.

Schwenningen am Neckar, Germany

FOR SALE—Basic Patent. Efficient, three-way movement, controllable automobile head light device, suitable for all standard automobiles. Makes night driving safe and satisfactory. Always clear vision of roadway, without blinding on-coming driver. F. G. GAUNTT, Fort Wayne, Indiana.

FOR SALE—General machine and cylinder grinding shop. In town of thirteen thousand population, no other cylinder grinding shop within thirty miles. Best equipped to handle automotive work in this section. Address Box 6131, care MOTOR AGE, 5 S. Wabash Ave., Chicago, Ill.

WE BUY OLD PLATINUM POINTS

In any condition and any quantity. Full value paid. Send them to us, we will mail check or money order at once. N. Uhler Company, 117 N. Dearborn St., Chicago, Ill.

Tool equipment for sale. Going out of business. Includes 15 inch lathe, Welding outfit, Blacksmith tools, Modern repair shop equipment. The Central Garage, Wheaton, Ill.

FOR SALE—Garage in Southwest Oklahoma well equipped repair shop. Good stock Ford parts and accessories. Five gallon Bowser Gasoline pump. Olustee Garage, Olustee, Okla.

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Will invest limited amount of capital in light car business in connection with opportunity in sales capacity with live dealer. Box 6129, MOTOR AGE, 5 So. Wabash Ave., Chicago, Ill.

SITUATIONS WANTED

WANTED—Connection by single man, twenty-nine. Experienced automobile and general merchandise manager. Prefer territory representative for automobile manufacturer. Would accept foreign employment. Best of references. Address Box 6128, care of MOTOR AGE, 5 So. Wabash Ave., Chicago, Ill.

SPOTLIGHT SERVICE

will find it for you
—have you tried it?

GOOD POSITIONS

in the automotive industry—
for both executives and employees—can be obtained through inexpensive advertising in the Spotlight Department. Employers find such advertising the quickest and most effective means of obtaining a choice of competent employees.

If you are offering or looking for an opportunity of any kind in the automotive industry let Spotlight Service help you.

AUTO Save 50 — 90% 2000 Models PARTS

NEW AND USED GEARS, AXLES, BEARINGS, SPRINGS, MAGNETOS, GENERATORS, ETC. JOBBERS IN BANKRUPT AUTO SUPPLIES.

BRIGHTMAN AUTO EXCHANGE

321 Windsor Ave.

HARTFORD, CONN.

JANSEN FLY WHEEL GEAR RINGS

Chevrolet 490.....\$3.00

Chalmers.....4.00

JANSEN MACHINE COMPANY

Des Moines, Iowa

PARTS and REPAIRS

AUTO PARTS

SAVE 50% TO 75% ON ALL CARS

New and Used Gears—Springs and Axles—Cylinders—Motors—Rear Systems, etc. Wire or Write

INDIANA AUTO PARTS CO.

316-18 NO. ILLINOIS ST., INDIANAPOLIS, IND.
LARGEST CAR WRECKERS IN INDIANA

PARTS FOR AUTOS AND TRUCKS

WHAT DO YOU NEED? We have it. Gray's Auto Parts Company, 3212 Brighton Road, Pittsburgh, Pa.

MAGNETOS AND SERVICE STATIONS

Electric Motor Bargain

1/2 H. P., single phase, 60 cycle, 110 or 220 volt, 1750 revolution, Dayton, repulsion induction type motor with base and pulley. Regular price, \$49.

Special price to April 19 only.....\$39

An excellent motor for powering garage tools.

The Fuerst-Friedman Co.

Cleveland, Ohio

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PATENTS

BOOKLET FREE HIGHEST REFERENCES
PROMPTNESS ASSURED BEST RESULTS

Send drawing or model for examination and report as to patentability

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Attorney-at-Law and Solicitor of Patents

C. L. PARKER

Formerly Member Examining Corps., United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request. McGill Building, WASHINGTON, D. C.

ANY PART for ANY CAR NEW or USED Send for Catalogue Cincinnati Auto Parts & Wrecking Co. 712-714 Walnut St. CINCINNATI, OHIO Parts our middle name

COMPLETE STOCK New and Used Auto Parts, Accessories and Supplies, for all make and models of cars. CADILLAC "57" MOTOR COMPLETE or any part of same. FENDERS for all Cadillac models. MERCER MOTOR COMPLETE with U. S. L. Starter. FOHRMAN BROS. AUTO PARTS COMPANY 2344 South State St., Chicago, Ill.

NEW AND USED AUTO PARTS We have wrecked over a thousand cars.

SANDER BROS. AUTO WRECKING CO. WEST POINT, IOWA

WICHITA AUTO WRECKING CO. "The Old Reliable"

Offers you quick service, quality parts and absolute satisfaction,—and our prices are a little lower. We are an old reliable house and all that implies. Our stock of parts is one of the largest in the country—from a 1907 one cyl. Reo to a 1921 Overland Four.

Wichita GIVE US YOUR NEXT ORDER Kansas

DOWMETAL PISTONS Lighter, stronger, and longer wearing than aluminum or iron. Can be fitted with bronze bushings in the wrist pin holes same as in iron pistons. Dowmetal has no permanent growth. The expansion is little more than iron.

SEND FOR PARTICULARS

LAMBERT & MANN CO.

Cylinder and Crankshaft Grinding
215-21 N. Wood St. CHICAGO Phones West 4918

200,000 Swear By Them!

200,000 expert mechanics who used to swear at their tools now swear by Snap-ons. They are creating a market for you by bragging to their friends. And no one can sell to that market at lower prices than you can. Write and find out why, today.

MOTOR TOOL SPECIALTY CO.

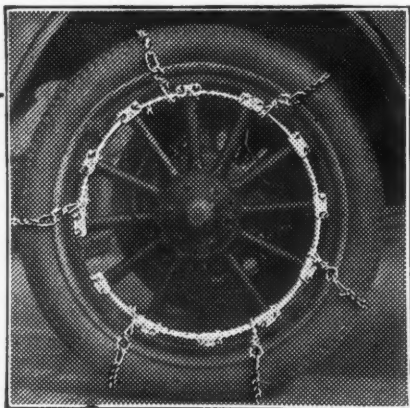
14 E. Jackson Blvd., Chicago

SNAP-ON WRENCH CO., MFRS.

Milwaukee, Wis.

Snap-on

INTERCHANGEABLE
Socket Wrenches



Travelon NON-SKID ATTACHMENT

You can sell the Travelon Attachment easily to anyone who drives his own car.

Just explain that if they use the "Travelon" they won't become rain-soaked or covered with mud when road conditions call for chains.

Tell them, too, that they won't have to roll or jack up their car, as the links snap to the rails you install, in an instant.

A good profit, too, in selling the TRAVELON.

Write for folder and prices.

THE **SHAW-WALTON CO.**
PONTIAC, ILLINOIS

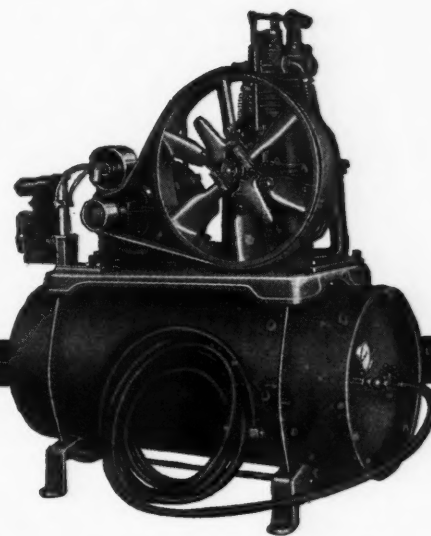
Index to the

The Advertisers' Index is published as a convenience and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

| | | | |
|--|-----------|--|-------------|
| A. C. Spark Plug Co..... | 82, 91 | Dalton & Balch..... | 133 |
| Adjustable Bearing Co..... | 134 | Dickerson, C. A., Compressor Corp..... | 133 |
| Ahlberg Bearing Co..... | 134 | Durant Motors, Inc..... | 114 |
| Ajax Auto Parts Co..... | 83 | Eastern Mach. Screw Corp..... | 136 |
| Akron-Selle Co., The..... | 122 | Eaton Axle & Spring Co..... | 132 |
| Albertson & Co..... | 67 | Eclipse Mach. Co..... | 132 |
| Allen Mfg. Co., The..... | 136 | Elgin Machine Works..... | 135 |
| Almond, T. R., Mfg. Co..... | 133 | Essex Motors..... | Front Cover |
| Alvord Reamer & Tool Co..... | 135 | Federal Engineering Co..... | 135 |
| American Asbestos Co..... | 136 | Federal-Mogul Corp..... | 80 |
| American Flatlite Co..... | 133 | Federal Pressed Steel Co..... | 132 |
| American Hamm. Piston Ring Co..... | 135 | Fendagard Sales Corp., The..... | 101 |
| American Motor Prod. Corp..... | 136 | Fisk Tire Co., Inc., The..... | 111 |
| American Oil Pump & Tank Co..... | 99 & 100 | Fitzgerald Mfg. Co..... | 124 |
| American Sales Book Co., Ltd..... | 62 | Flower City Spec. Co..... | 135 |
| Anchor Electric Co..... | 128 | Folberth Auto Spec. Co..... | 132 |
| Arrow Head Steel Prod. Co..... | 132 | Follett Time Recording Co..... | 131 |
| Auto-Hone Co., The..... | 117 | Forest Elec. Co..... | 132 |
| Auto Spring Control Co..... | 126 | Fredericks, H. M., Co..... | 85 |
| Autocoil Co., The..... | 134 | G. H. Tension Ring Co., Inc..... | 134 |
| Automotive Maint. Mach. Co..... | 136 | Gammans-Holman Co., The..... | 130 |
| Bearings Co. of America..... | 131 | Gardner Motor Co., Inc..... | 61 |
| Bellevue Mfg. Co..... | 135 | Gates Rubber Co..... | 133 |
| Bennett Injector Co..... | 123 | Gaylord Mfg. Co..... | 133 |
| Bethlehem Spark Plug Co..... | 77 | Gemco Mfg. Co..... | 92 |
| Biflex Corp., The..... | 135 | Goodrich, B. F., Rubber Co..... | 3 |
| Black & Decker Mfg. Co..... | 130 | Graham Brothers..... | 105 |
| Bosch Magneto Corp., American..... | 3rd Cover | Gray Motor Corp..... | 97 |
| Bosch, Robert, Magneto Co..... | 129 | Green Engineering Co., The..... | 128 |
| Bowser, S. F., & Co..... | 68 | Grinder Sales Co..... | 125 |
| Boyle Valve Co..... | 131 | Hall Cylinder Hone Co., The..... | 111 |
| Brunner Mfg. Co..... | 104 | Hobart Bros. Co..... | 134 |
| Burton-Rogers Co..... | 120 | Hoess Brothers..... | 134 |
| C. & G. Wheel Puller Co..... | 135 | Huetter Mach. & Tool Co..... | 134 |
| Cadillac Motor Car Co..... | 57 | Hyatt Roller & Bearing Co..... | 76 |
| Case, J. I., T. M. Co..... | 134 | Hyman Pressed Body Co..... | 66 |
| Chase, L. C., & Co..... | 4 | Independent Pneumatic Tool Co..... | 126 |
| Chevrolet Bros. Mfg. Co..... | 136 | Inshield Prod. Co., The..... | 135 |
| Chevrolet Motor Co..... | 102 | International Gear Co., Inc..... | 69 |
| Chicago Solder Co..... | 135 | Jacobs Auto Safety Lamp Co., Inc..... | 121 |
| Cincinnati Victor Co., The..... | 120 | Johnson Gas Appliance Co..... | 134 |
| Clearing House—See Spotlight Department. | | Kawneer Co., The..... | 135 |
| Cole Storage Battery Co..... | 132 | Kellogg Mfg. Co..... | 134 |
| Colonial Gear & Mfg. Co..... | 136 | Kelso Mfg. Co..... | 134 |
| Columbia Motor Car Co..... | 135 | | |
| Conneaut Packing Co..... | 136 | | |
| Crane Puller Co..... | 124 | | |
| Curtis Pneumatic Mach. Co..... | 139 | | |
| Cyclo Manifold Co..... | 132 | | |

Advertisements

| | | | |
|--|------------|---|---------|
| King Sewing Mach. Co..... | 132 | Russell, Burdall & Ward Bolt & Nut Co..... | 98 |
| Kissel Motor Car Co..... | 134 | | |
| Kokomo Rubber Co..... | 60 | | |
| | | Sales Equipment Co., Inc..... | 136 |
| Landis Tool Co..... | 130 | Sav-Oil Ring Mfg. Co..... | 133 |
| Lasco Corp..... | 133 | Service Equipment Associates..... | 133 |
| Laurel Motors Corp..... | 130 | Service Mfg. Co..... | 128 |
| Libby Mfg. Co..... | 116 | Shaw-Walton Co..... | 138 |
| Lorentzen Headlight Kontrol Co..... | 135 | Skat Co., The..... | 128 |
| Louisville Electric Mfg. Co..... | 131 | Snap-On Wrench Co..... | 138 |
| Lupton's, David, Sons Co..... | 96 | Speed-O-Multiple Valve Lifter Corp..... | 134 |
| Lux Clock Mfg. Co., Inc..... | 127 | Spotlight Dept..... | 137 |
| Lycoming Motors Corp..... | 88 | Steinberg Prod. Co..... | 136 |
| | | Stevens & Co..... | 133 |
| McQuay-Norris Mfg. Co..... | 135 | Stewart-Warner Speed. Corp..... | 70 & 71 |
| Manley Mfg. Co..... | 125 | Storm Mfg. Co..... | 131 |
| Marlin-Rockwell Corp..... | 133 | Studebaker Corp..... | 5 |
| Maxwell-Chrysler..... | 8 | | |
| Meachem Gear Corp..... | 132 | Thermoid Rubber Co..... | 65 & 66 |
| Mechanical Production Co..... | 106 | Thomson Mfg. Co..... | 129 |
| Milwaukee Die Casting Co..... | 136 | Timken Roller Bearing Co..... | 80 & 81 |
| Milwaukee Motor Prod., Inc..... | 90 | Toledo Mfg. Co..... | 127 |
| Monarch Mfg. Co..... | 113 | Toledo Steel Prod. Co., The..... | 136 |
| Moon Motor Car Co..... | 1 | Tripp-Secord & Co..... | 134 |
| Mountain Accessory Co..... | 93 | Turner Mfg. Co..... | 129 |
| | | Tuthill Spring Co..... | 107 |
| N. & N. Hydrometer Co..... | 136 | Tyson Mfg. Co..... | 136 |
| Nash Motors Co..... | 6 | | |
| New Departure Mfg. Co..... | 130 | United Mfg. & Dist. Co..... | 108 |
| No-Leak-O Piston Ring Co..... | 112 | U. S. Air Compressor Co..... | 118 |
| Norlipp Co., The..... | 109 | U. S. Auto Supply Co..... | 135 |
| North Bros. Mfg. Co..... | 123 | U. S. Electrical Tool Co..... | 103 |
| Norwalk Auto Parts Co..... | 136 | Universal Industrial Corp..... | 110 |
| | | | |
| Oakes Co., The..... | 94 & 95 | Velie Motors Corp..... | 63 |
| Oestern Mfg. Co., The..... | 126 | Vesta Battery Corp..... | 132 |
| Olds Motor Works..... | 7 | Victor Rubber Co..... | 74 & 75 |
| | | Vitek Mfg. Co..... | 127 |
| Packard Motor Car Co..... | 140 | | |
| Peck Spring Co..... | 124 | Walden-Worcester Co..... | 131 |
| Peerless Motor Car Co..... | 72 & 73 | Wall Pump & Compressor Co..... | 133 |
| Petersen, A. H., Mfg. Co., 2nd Cov. | | Warford Corp..... | 134 |
| Plaff Mfg. Co..... | 130 | Watkins Mfg. Co..... | 84 |
| | | Watson Co., John W..... | 132 |
| Quality Elec. Prod. Co..... | 127 | Waukesha Motor Co..... | 131 |
| | | Wayne Tool Mfg. Co..... | 122 |
| Ramsey Accessory Corp..... | 132 | Weaver Mfg. Co..... | 133 |
| R. I. V. Company..... | 118 | Weidenhoff, Joseph, & Co..... | 131 |
| Red Giant Tool Corp..... | 116 | Welker-Hoops Mfg. Co..... | 132 |
| Remington Automotive Corp..... | 134 | Westcott Motor Car Co..... | 59 |
| Remington Cash Register Co..... | 64 | Whitney Mfg. Co..... | 126 |
| Republic Motor Truck Co..... | | Wilkening Mfg. Co..... | 132 |
| | Back Cover | Williamson-Beach Co..... | 133 |
| Roller Bearing Co. of Amer..... | 129 | Wood-Imes Mfg. Co..... | 136 |
| Rome-Turney Radiator Co..... | 135 | | |
| Ross Gear & Tool Co..... | 119 | York Electric & Mach. Co..... | 132 |
| Both, G. A., Mfg. Co..... | 87 | | |
| Royal Piston Ring Co..... | 134 | Zenith-Detroit Corp..... | 132 |

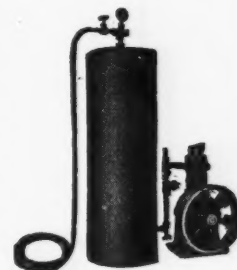


Real Air Service in This Curtis

THE above illustration is the Curtis Style V Two-stage Outfit—one of the family of popular Curtis Outfits—the last thing in air compressor design—free of complicated parts—built for hard usage and will be on the job all the time. $\frac{1}{4}$ to 3 H.P.—automatic.

Single and Two-stage Many Sizes and Styles

We manufacture a complete line of single and two-stage outfits. You are sure to find one that will meet your particular needs in style, size and price. Write at once for full information and descriptive literature. Use the coupon below, or a postcard will do.



Style "S" Single Stage Outfit. Belted only. Five sizes— $\frac{1}{4}$ to 3 H.P. motor required.

CURTIS PNEUMATIC MACHINERY CO.
1527 Kienlen Ave. St. Louis, Mo.

Branch Office:

530-H Hudson Terminal • New York City

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AIR COMPRESSORS—HOISTS—TROLLEYS—CRANES

COUPON

CURTIS PNEUMATIC
MACHINERY CO.

Established 1854

1527 Kienlen Ave.,
St. Louis, Mo.

Gentlemen: Please send me full details on Curtis Air Compressors—your proposition and prices.

Name.....

Address.....

Jobber's Name.....

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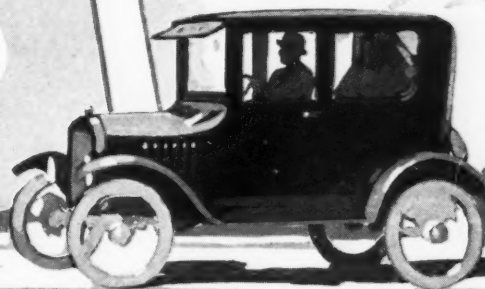
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